AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

JANUARY, 1959

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Precision Metal Molding

PMM

INCLUDING DIE CASTINGS MAGAZINE

DIE CASTINGS

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INVESTMENT CASTINGS

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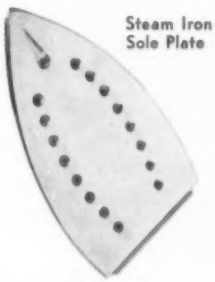

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PMM **IN THIS ISSUE** January, 1959: Volume 17 Number 1

COVER

THIS DIE CASTING DIRECTORY has been greatly enlarged to be of even greater service to users and prospective users of die castings. Machining operations which your die caster will do for you have been broken down finer as have surface finishing operations. In addition, an entirely new section, Tool & Die Makers who are experienced in the manufacture of die casting and trimming dies has been added. The number of die casting foundries listed this year is, of course, greater than ever before.

FEATURE ARTICLES

43 SINTERINGS ARE THE CHOICE
Both economy of manufacture and properties that could not be secured by any other method dictated the use of sinterings.

44 GENERATING PROTECTIVE ATMOSPHERE
Here's a new gas generator that can produce neutral or reducing atmospheres with very low dew points.

45 DIE CASTINGS WILL TAKE HIGH STRESSES
If the design is right, aluminum die castings can be used under conditions of high stress and the economy of their use is still there.

46 DESIGN CHANGE + SHELL MOLDING = SAVINGS
By changing from sand castings to shell molded castings the manufacturing cost of five different parts was drastically cut and better parts were secured.

48 H-12 HOT WORK DIE STEEL
When H-12 die steel is properly heat treated it has a distinctive microstructure. Photomicrographs show both correctly and incorrectly heat-treated steel.

50 CUT ASSEMBLY COSTS WITH EXTRUDED SECTIONS
By replacing a number of machined and assembled parts with a single extruded section costs can often be cut quite drastically and a better part secured.

52 JOINING ALUMINUM
Some notes on how to solder, braze, and weld aluminum extrusions and aluminum castings.

54 IMPROVED MATERIALS HANDLING METHODS
The largest die casting foundry in England doubled its output with no increase in floor space and cut costs by installing new materials handling equipment.

57 IMPROVED EXTRUSION LUBRICANTS
The success or failure of the extrusion can be determined by the lubricant used. The wrong lubricant can mean off size parts and short die life.

59 LOW COST MINIATURE CASTINGS
By new methods that have been developed in the investment casting industry, tiny castings can now be made that are extremely accurate and low in cost.

FINISHING SECTION

69 SPRAY PAINTING DIE CAST TOYS
Electrostatic paint spraying can cut over-spray to almost nothing and produce a more uniform paint job so that rejects are reduced.

71 BARREL FINISHING TINY PARTS
Barrel finishing can be used for precision surface finishing of even tiny metal parts.

DIRECTORY SECTION

88 3rd ANNUAL DIE CASTING DIRECTORY, SECTION I
An alphabetical listing of custom die casters with notes on their facilities and services.

112 3rd ANNUAL DIE CASTING DIRECTORY, SECTION II
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122 3rd ANNUAL DIE CASTING DIRECTORY, SECTION III
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125 3rd ANNUAL DIE CASTING DIRECTORY, TOOL AND DIE MAKERS
For the first time, a listing of tool and die makers, arranged geographically, who are experienced makers of die casting dies or trim dies.

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Precision Metal Molding

PMM

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Editorial and executive offices: 812 Huron Rd., Cleveland 15, O.

IRVING B. HEXTER.....*president*
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STAFF

David W. Veit ....publishing director
Philip R. Kalischer .....editor
Scholer Bangs .....western editor
672 So. Lafayette Park Pl.
Los Angeles 57, California
John H. Haselow ....assistant editor
N. G. Kiser .....circulation manager
R. V. Black ..mgr. reader service dept.

SALES OFFICES

Cleveland 15
812 Huron Rd., SU-1-9620
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New York City 17
Rm. 835, 60 E. 42 St. MU 7-3420
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Chicago 11
Rm. 704, 520 N. Michigan,
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672 S. Lafayette Park Pl.,
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ALAN T. CAZIER *manager*
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31 Palace St., Westminster,
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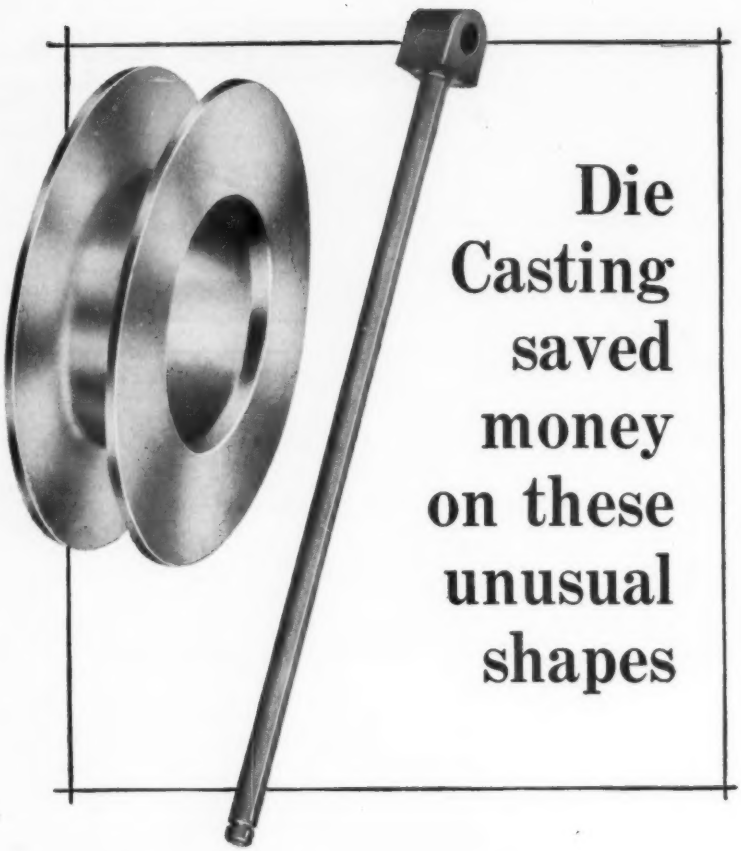

Die Casting saved money on these unusual shapes

Sometimes die casting wins by default. Take this spring retainer and spinning reel spool . . . neither, at first glance, seemed a job for die casting. But would it pay to stamp and braze and machine and drill the retainer? Would it be difficult to maintain a critical tolerance on the spool? Could you get necessary accuracy and strength?

In each case, other processes were previously used but die casting was later specified because it does so many things so well. That's the secret of die casting . . . *flexibility!* No other process combines strength, precision, speed and cost-cutting abilities quite like die casting.

If you want to know whether die casting can save you parts money, contact Twin City Die Castings. Twin City has a history of making the process save assembly steps—pay better.

...only DIE CASTING can
✓ cut your costs ✓ offer such flexibility
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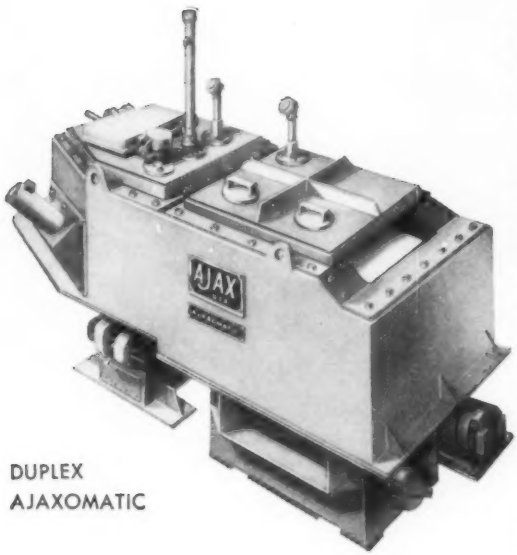
CAN WE STILL AFFORD HAND-LADLING?

AJAXOMATICS

bring automation to die casting



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AJAXOMATIC

The Duplex AJAXOMATIC melts aluminum pig and gates right at the die casting machine. By pushing a button the operator initiates the complete casting cycle: the die closes and the Duplex AJAXOMATIC pours the exact required amount of molten metal directly into the cold chamber. The operator just removes the finished casting at the end of the cycle.

Automation, however, is only part of the AJAXOMATIC story. The Duplex AJAXOMATIC also gives assurance of consistent quality. The quality of a finished casting begins with the proper melting of the metal. 60 cycle induction with its two basic features of internal heating and electromagnetic stirring is used exclusively in the Duplex AJAXOMATIC. Here are the unique characteristics of the Duplex AJAXOMATIC:

Precision temperature control — at low temperature	No supply ladle system or hand ladles
Alloy uniformity — no segregation	Precise weight of automatic pour
No gas porosity	Comfortable working conditions
Low metal loss	Low maintenance

The standard Duplex AJAXOMATIC is rated 120 kw to produce 500 lbs per hour of castings ranging from ½ lb to 30 lbs. Other AJAXOMATICS are available to suit a wide range of production requirements, including units supplied from central melting systems. May we have an opportunity to study your requirements?

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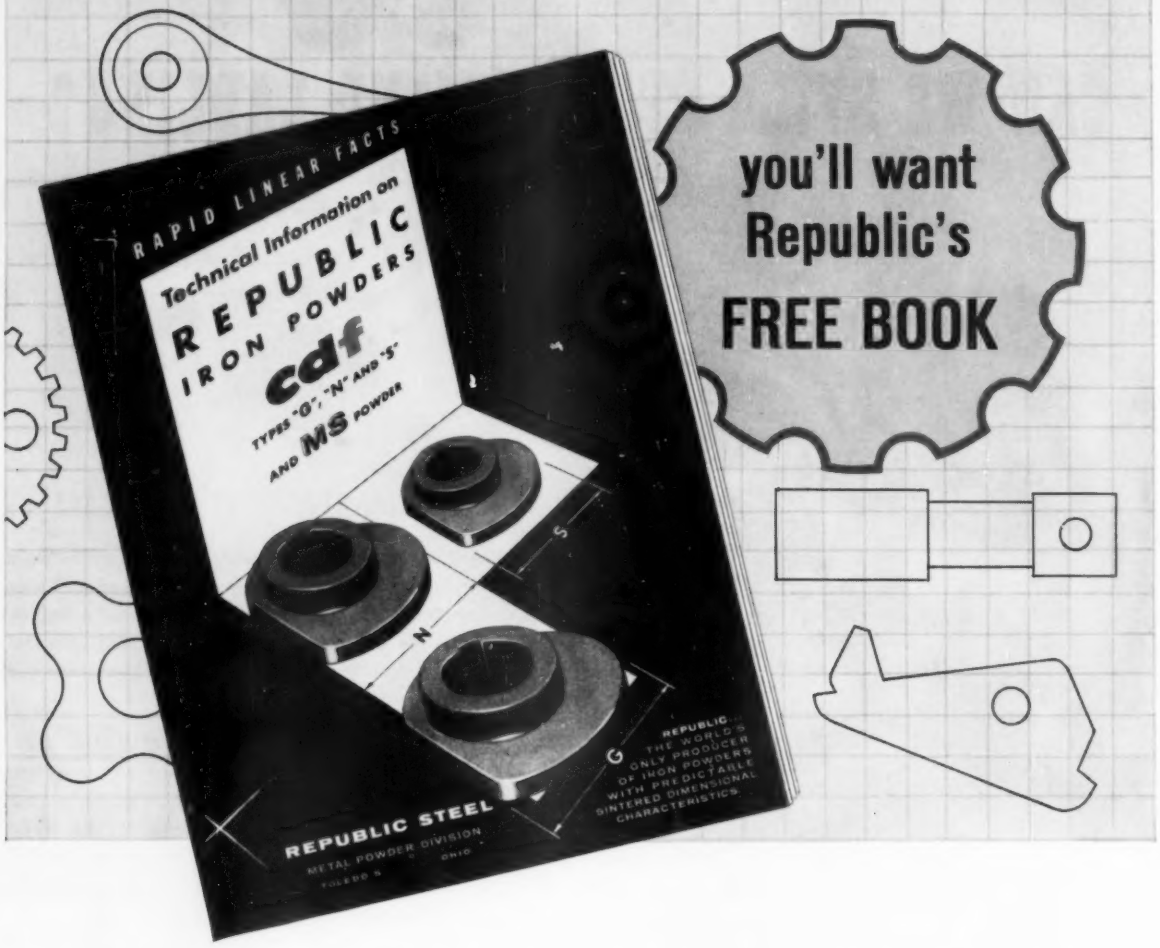

This new 48-page book has been prepared especially for tool engineers, part designers, metallurgists, and fabricators. It contains complete technical data on Republic's improved Controlled Dimensional Factor Powders and new MS Powder.

Data are presented by an entirely new method. Most of the necessary information regarding a particular powder's behavior can be read from the curves on a single set of ordinates.

The first section of the book lists complete specifications for Republic's CDF Powders, Type "G" for growth, Type "N" for normal, Type "S" for shrinkage. Each of these powders has been improved with regard to compressibility, dimensional characteristics, and increased tensile strengths.

Section two provides complete information on Republic's new MS Powder, developed principally for use with graphite rather than copper. MS possesses features which make it economically attractive for use in a wide variety of mechanical parts, and in electrical and magnetic applications.

Write Dept. PM-6865, 1441 Republic Building, Cleveland 1, Ohio, for your free copy of Republic's new Iron Powder Book. Ask for ADV. 1014.

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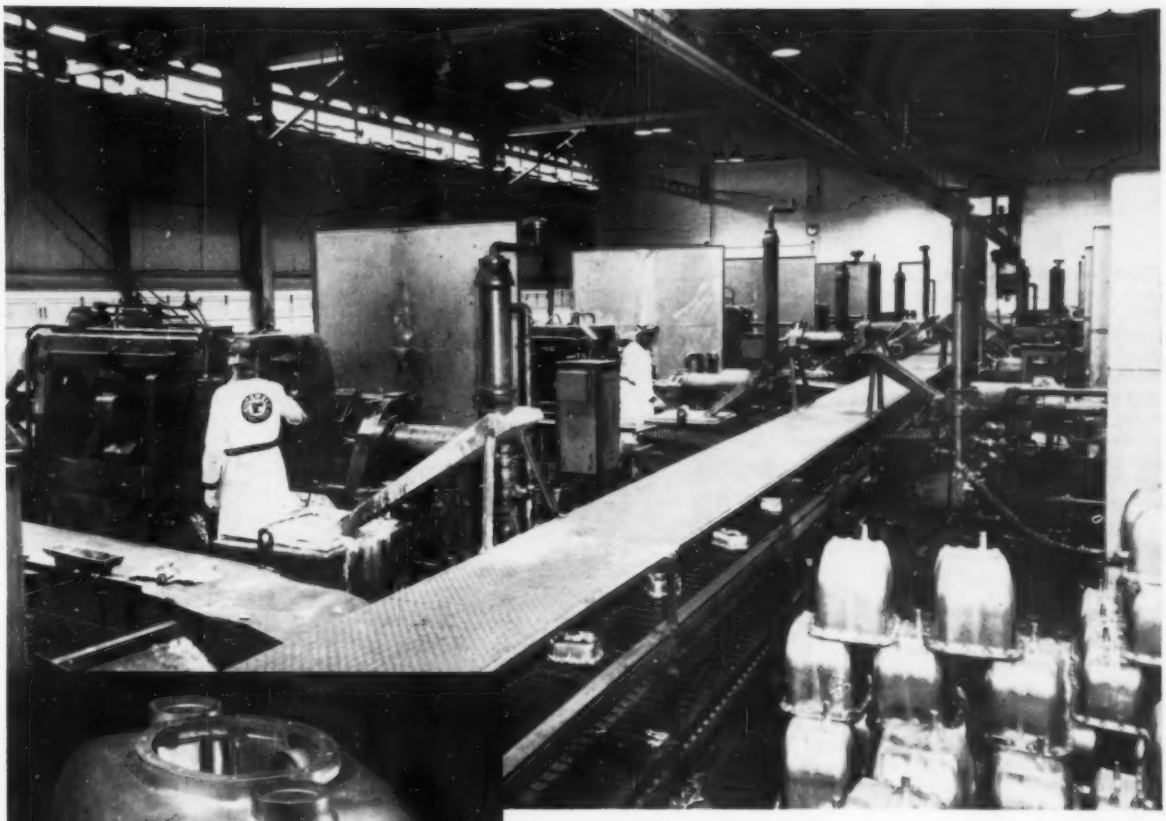

"LESTERS take the human element out of die casting operations"

Since aluminum meter die castings must be pressure proof and free of porosity and of a special alloy, Rockwell Manufacturing Company had a problem to secure high grade castings in production quantities. This was especially true of the Rockwell 700-800 Gas Meter parts (shown at left) which were very difficult to cast. One part alone weighs 16 lbs. 12 oz., machined—measures 13-1/2″ x 16″ x 12-11/16″ deep—and is required to stand 40 lbs. of air pressure under water at 110 degrees.

This part is now produced by a $23,000 die run in an 800 ton Lester Machine with a 30″ die movement, automatically ladled, at Rockwell's Plant in Russellville, Kentucky.

It is the opinion of Jack Whipple, Die Cast Supt. at the Russellville Division of Rockwell Manufacturing Company, that with the speed and pressure you get from a Lester Machine, it is possible to eliminate a lot of human error in die casting. Therefore, it takes less experienced operators to produce the high quality necessary for Rockwell products.

Rockwell is operating 19 Lester Die Casting Machines at its 106,000 sq. ft. air conditioned Die Cast Plant at Russellville.

If you are interested in making quality die castings, write for complete information on Lester Die Casting Machines.

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PMM CASTING ABOUT

technical news of applications
& processes involving precision metal moldings

"THE ALL ALUMINUM CAR" is it a near reality or simply a designers dream? Stylists at Kaiser Aluminum believe that much of the steel now used in American automobiles can be replaced with aluminum. Both structural, including the engine, and body components can be changed at any time and without any greater change in tooling than is normal for the periodic design changes. What are some of the ideas which these stylists present.

Body panels in a variety of finishes of aluminum.

Two piece die cast aluminum doors.

Rear decks and roofs of aluminum sheet.

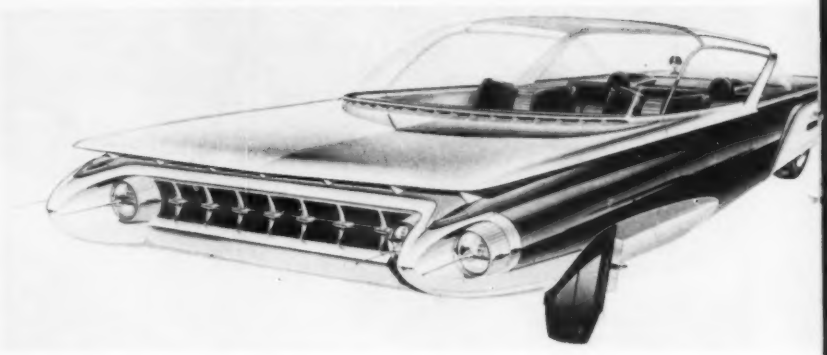
Bumpers of aluminum castings and extrusions.

Aluminum grills.

Aluminum engines, either conventional or flat and either air or liquid cooled.

Aluminum wheels, hubs and brake drums integrally cast.

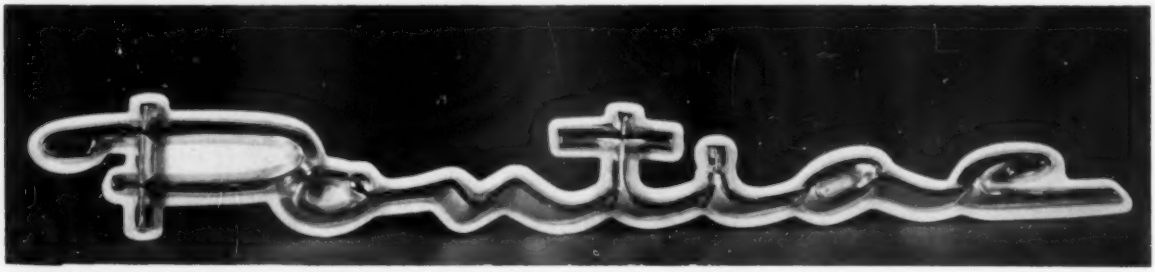
Aluminum body frames.



The advantages of aluminum are many including longer tool life due to the easier formability, a wider variety of and more attractive finishes, complete freedom from normal corrosion, and, of course, lighter weight with consequent improved operating economy.

With aluminum, the stylists say, greater glass area is possible so that visibility is vastly improved.

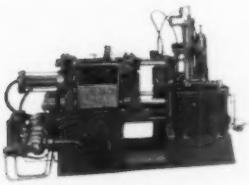
The design shown is only one of a group that Kaiser Aluminum designers have presented to the automobile industry. While the idea of an all aluminum car is probably too radical a departure for Detroit to swallow in a lump, it is certain that some of the advanced ideas will be developed within the nex two or three years.

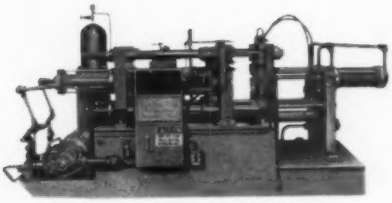


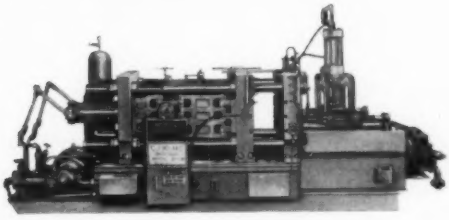
ANODIZED ALUMINUM DIE CASTINGS have been talked about, but little has been done by way of commercial production. For 1959, Pontiac automobiles will carry a die cast name plate. The insignia are vacuum die cast in an aluminum alloy that is substantially free of silicon. The background is lacquered white and the name is gold anodized. While this is a relatively small application and may still be rather expensive it points to eventual success in color anodizing of die cast aluminum parts.

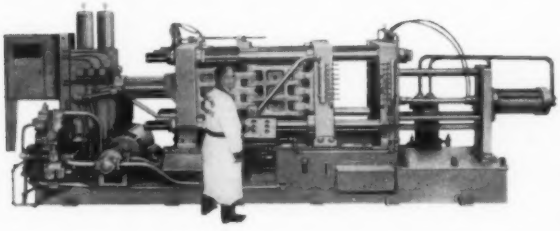
SINTERED-NICKEL CADMIUM BATTERIES may be the next major use for powdered nickel. For some applications these batteries are the only solution to a knotty problem. They are rechargeable, do not gas when charged and hence can be hermetically sealed. No corrosive electrolyte is needed.

One of the latest additions to this line of batteries is a miniature unit about the size of a 5¢ piece that is being made by Gulton Industries. These small cells are made for minimum power requirements, but can be made up into cylindrical stacks to form powerful batteries.









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50-ton locking pressure*
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500 — Model 500-N Cleveland
500-ton locking pressure*
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650 — Model 650 Cleveland
650-ton locking pressure*
Max. weight of shot, 10.6 lbs. alum.; 25.8 lbs. zinc

800 — Model 800 Cleveland
800-ton locking pressure*
Max. weight of shot, 20.1 lbs. alum.; 47.6 lbs. zinc

1000 — Model 1000 Cleveland for Aluminum
1000-ton locking pressure*
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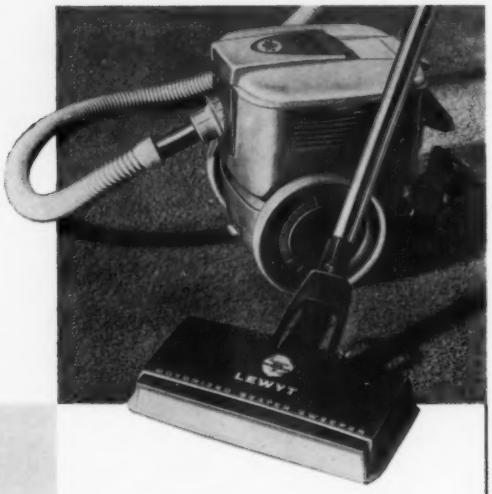

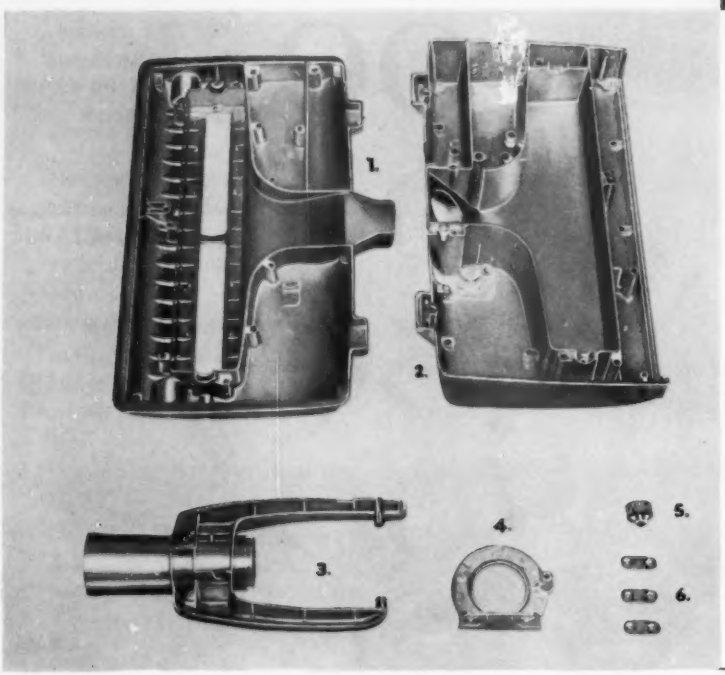

The Lewyt Corporation has taken the the work out of house-cleaning with the newly designed Motorized Beater-Sweeper in their Electronic Vacuum Cleaner. The ingenious motor-and-gear driven Beater-Sweeper is less than 3" high — weighs only 5 pounds — 1/5 the weight of conventional upright cleaners, yet provides more efficient rug cleaning.

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2. Aluminum Body, hinged to glider plate.
3. Zinc Yoke connecting handle to body.
4. Zinc Motor Bracket.
5. Zinc Gear for Rotating Brush shaft. (Operates at 4,000 r.p.m.).
6. Zinc Ratchets used in "Click-lock" wands for positive locking action.

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DOLLIN Zinc & Aluminum DIE-CASTINGS

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why

AMAX ZINC-BASE ALLOYS

mean

BETTER DIE CASTING

AMAX Zinc-Base Alloys mean better die casting for a number of reasons, but basically, their sum is this one critical fact: *Quality control through every phase of the production cycle.*

From raw materials to final ingot casting, AMAX's rigid standards ensure soundness and uniformity within precise composition specifications. Step-by-step control yields zinc-base alloys which help assure you of uninterrupted, trouble-free casting and flawless products. Exacting standards that are routine practice at AMAX include:

- **Only premium-grade raw materials go into AMAX Zinc-Base Alloys**
- **Sampling and testing is performed at every production step**
- **Each heat is spectroscopically analysed, assuring precise composition**
- **Every individual production order is carefully supervised**

If you would like further facts on the advantages of specifying AMAX, or if you would like technical assistance, please contact the Metal Sales Department.

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ACHESON

dispersions digest

Reporting uses for

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COLLOIDAL GRAPHITE, MOLY-SULFIDE, VERMICULITE, AND OTHER SOLIDS

'DAG' DISPERSIONS – THE ANSWER TO LOWER COSTS, BETTER CASTINGS

Acheson dispersions have proved themselves to be particularly effective as die and mold cavity coatings. They contain heat-resistant solid particles so finely divided that they remain in suspension for extended periods, making continuous agitation unnecessary. This fineness is an important characteristic because the films formed with these dispersions are so thin that they do not affect casting dimensions. As described in the following application case histories, both colloidal and semi-colloidal dispersions provide excellent parting, high-quality surface finishes, and longer die life. The consistent uniformity of 'dag' dispersions is your assurance of uniform castings.

A 'dag' 193 wash sprayed on mold cavities at Rapidscast Corporation gives them aluminum permanent mold castings of more uniformly high quality.

"We're sold on 'dag' 193 because it's consistent", states Robert Cope, president of Rapidscast Corporation, Grand Rapids, Michigan. After trying 22 mold wash combinations with as many different characteristics, Mr. Cope settled on 'dag' 193 — an Acheson vermiculite dispersion with a water carrier. Why? . . . Because of its completely uniform consistency, 'dag' 193 can be easily mixed to the three dilution ratios Rapidscast uses to obtain the required variance in film thickness throughout their molds. The unbroken film provided by this dispersion acts as a heat-holding blanket which helps to prevent "shrinks" or vacuum holes caused by uneven cooling of the molten metal. Also important to Rapidscast is the durability of a 'dag' 193 film coating. One application generally lasts through an entire molding day of three shifts, except for occasional touch up at wear points. And this uninterrupted production is a "must" since Rapidscast supplies such demanding customers as the automotive, aircraft, hydraulic, marine and appliance industries.

You'll find that Acheson processing methods produce dispersions of finer quality and more versatile use. Call your Acheson Service Engineer today for more specific information on the use of 'dag' dispersions. Or write direct for additional facts on "'dag' colloidal dispersions for use in metal casting," Bulletin No. 425. Address Dept. PMM-58.

Call in your Acheson Service Engineer today.

'Aquadag' finds ready acceptance by diecasters for its high temperature resistance, clean parting, and a smoother-surfaced casting.

Bendix finds 'Aquadag' a substantial cost saver. Rejects are down 30% at Bendix Foundries, Teterboro, New Jersey. Where surface folds, internal gas-induced porosity, and other not uncommon factors had previously caused a costly number of rejects in certain critical die-castings, Bendix now enjoys production advantages by using the Acheson water-based dispersion, 'Aquadag'. Used in casting magnesium jet-engine turbine blades and aluminum instrument components, the tough, dry lubricating film provides cleaner parting from the die. This film facilitates proper metal flow. It prevents the molten metal at 1250° F. from soldering to the steel die. It effectively resists the scrubbing action accompanying metal injection, where pressures are often as high as 30,000 psi. Proof of the inherent strength of this film is shown by the fact that one sprayed application normally lasts ten or more casting cycles. Die life is also appreciably extended. 'dag' Colloidal Graphite can play an important part in *your* casting operations . . . a lubricant that is non-volatile, chemically inert, and finely dispersed to provide complete coverage of the die surface.

ACHESON *Colloids Company*

PORT HURON, MICHIGAN

A division of Acheson Industries, Inc.

Also Acheson Industries (Europe) Ltd. and affiliates, London, England

Offices in: Boston · Chicago · Cleveland · Dayton · Detroit · Los Angeles · Milwaukee New York · Philadelphia · Pittsburgh · Rochester · St. Louis · Toronto

For more information circle No. 13 on the Reader Service Card

LETTERS

the readers' forum

PERFORATING

Your latest issue has come across my desk and, behold, something new has been added. For those, such as myself, addicted to saving tear sheets your perforated pages are a great convenience. Many thanks, for this innovation, may it be copied by your colleagues. –R.M.McC., chief draftsman.

I have noted with interest your November issue and find the pages have been perforated for removal. This is indeed a handy addition.–G.P.P., project engineer.

These two letters are typical of many that we have received commenting on the perforated pages in the November and December issues of PMM. We're glad that this small change increases the value of the magazine to our readers; after all, that's what we are in business for.–ed.

DIE MAKING METHODS

We have read with a great deal of interest the article in your October issue by Thomas G. Larkins.

We would appreciate it very much if you could tell us how to get in touch with the Elox Corp., of Michigan regarding their die-sinking method.–J.N.T., pres.

Would you please furnish us with the name and address of the company that manufactures the equipment to produce molds by the Elo-Met Electrode Process.

We are referring to the article in the October 1958 issue by Thomas G. Larkins.–M.A.K., pres.

The method of die-sinking referred to in both of these letters was developed by The Elox Corp., of Michigan, 1830 Stephenson Highway, Royal Oak 3, Mich.–ed.

VIBRATORY FINISHER

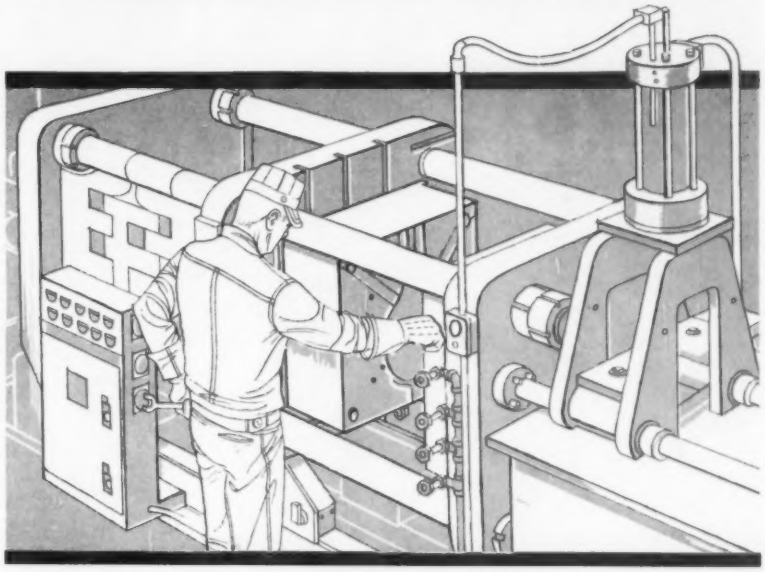
In your October issue there is an article on vibratory finishing in which the Lord Chemical Corp. was mentioned.

Will you please give me the address of the Lord Chemical Corp. –J.W.D.

The Lord Chemical Corp. is located at 2068 S. Queen St., York, Pa.–ed.

continued on page 64

If you can do it with light alloys . . . you can do it BETTER with PMD dies!



DIE CASTING DIES — PERMANENT MOLD DIES — PISTON CORES

Special Equipment

●

Permanent Mold Operating Devices

D.C. Casting Units

Billet Molds

Coilers for Tubing

Trim Dies

COMPLETE DESIGN AND ENGINEERING SERVICE AVAILABLE

Yes, if you produce light alloy castings, you can do it better with PMD dies! Longer service life, minimum starting problems, lower overall tooling costs — these are plus advantages you get from PMD!

One of America's largest independent producers of dies, molds, special machines and molding devices, Permanent Mold Die Company offers every facility to do the job right! Complete design-engineering service . . . skilled, experienced personnel . . . plus the specialized tools and equipment to meet every requirement.

PMD dies and molds are designed to perform to your specification! For the right solution to your tooling problems — call in a PMD specialist. Write or phone today!

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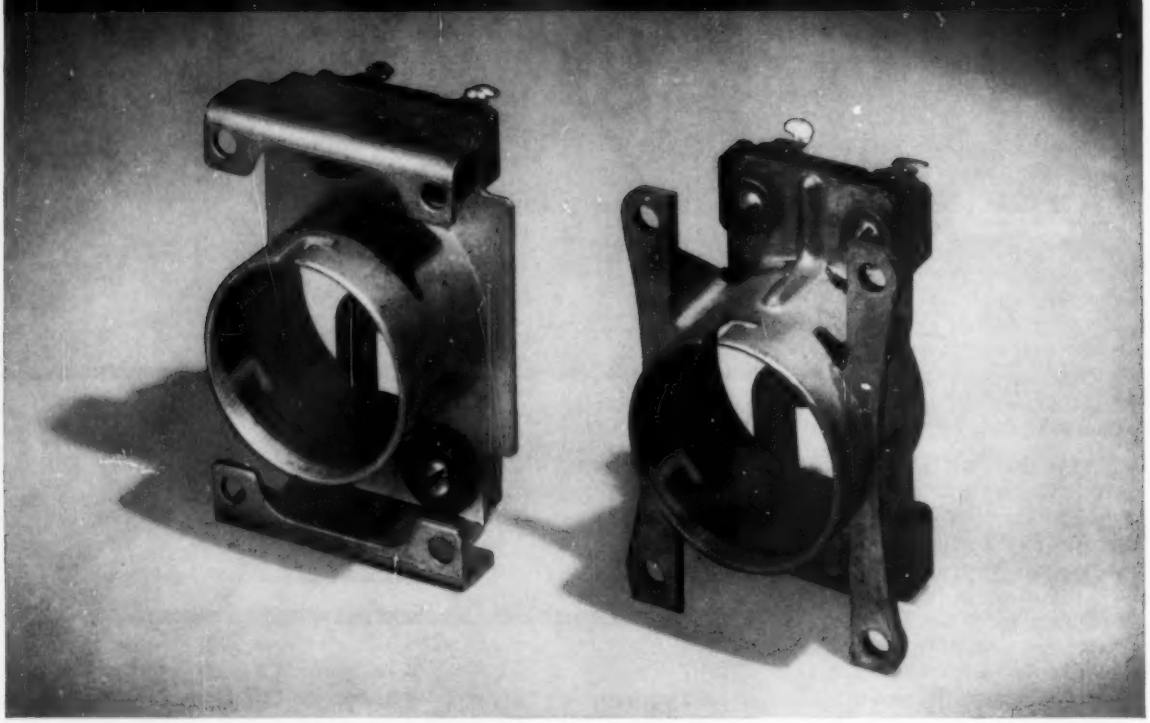
PMD

For more information circle No. 85 on the Reader Service Card

Cutting Costs and Saving Shop Time

ZINC DIE CASTINGS ARE BEST



Redesigning this vacuum tube base cut manufacturing costs by 50%.

The old base (shown at left) required seven operations from blanking the steel frame to staking the socket in position.

As a zinc die casting (shown at right), only one operation — punching the tube pin slot — was necessary. By die casting this part from zinc rather than from aluminum, the following *additional* advantages were achieved:

. . . **Less draft on the socket**
. . . **Greater overall strength**
. . . **Lower die cost**

For similar savings review your metal parts that possibly can be produced as ZAMAK alloy die castings.

HORSE HEAD® SPECIAL ZINC AND HORSE HEAD ZAMAK ARE PRODUCED BY

THE NEW JERSEY ZINC COMPANY

DEVELOPERS OF THE ONLY STANDARD ZINC DIE CASTING ALLOYS IN USE TODAY

160 Front Street • New York 38, N. Y.

HORSE HEAD PRODUCTS ®

For more information circle No. 77 on the Reader Service Card

PMM OPPORTUNITIES

jobs & equipment

Opportunities rates: $20 for the first column-inch; $15 for each additional column-inch payable in advance. To answer box number advertisements, address responses to the box at Precision Metal Molding. 812 Huron Rd., Cleveland 15, Ohio. Closing date: 1st day of month preceding publication.

POSITIONS OPEN

Die cast engineer wanted to take charge of engineering department of well established Los Angeles die casting company. Must have experience in die design, estimating and planning. Send complete resume to Box No. 1159.

DIE CASTING SUPERVISOR

We have an opening for a man who is well qualified to take over complete supervision of our zinc die casting department. Ability to handle and instruct personnel a prime requisite. Must be fully experienced in producing a hardware finish on zinc castings and in proper care and use of dies and machines. Salary open. Reply Box No. 1259.

Established Indiana multi-shift die cast plant requires a man with a proven record of supervisory experience to assume full responsibility of casting division. Will report directly to Mfg. V.P. Applicant must have a thorough knowledge and extensive experience in zinc die casting and trim operations. Send resume and salary requirement to Box No. 1359.

PLANT MANAGER — INVESTMENT CASTINGS

New investment casting plant opened by established midwest foundry. Experienced man required to assume complete responsibility for management of personnel, production, purchasing, tooling design, cost estimating. Must be strong in latest methods and metallurgy, ferrous and non-ferrous. Send complete resume. Reply to Box No. 1459.

SALES REPRESENTATIVE

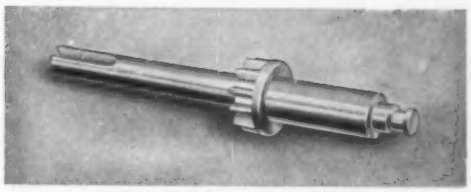
Supplier of replacement parts for die casting machines seeks established manufacturers representative to handle sale of products in Chicago and Wisconsin area. Write stating qualifications and present accounts. Box No. 1559.

continued on page 73

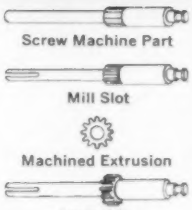
here's PROOF of how the GRC method cuts the cost of small parts...

Shown actual size

Take, for example, this part which previously had been produced 3 different ways . . .



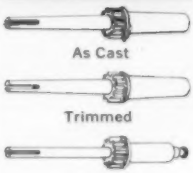
METHOD A — ASSEMBLY OF 2 SCREW MACHINE PARTS



4 Production Steps

+ 3 inspections

METHOD B — CONVENTIONAL DIE CAST AND MACHINED PART



3 Production Steps

+ 2 inspections

the GRC method — AUTOMATICALLY DIE CAST

1 Production Step

—only one inspection

Now take a look at these comparative figures . . .

	Purchased Material	Cost/M	Scrap Generation	Cost in lots of 100 M	500 M
Method A	Brass	$30	30%	$70/M	$69/M
Method B	Zinc Alloy	$3.82	5%	$30/M	$28/M
GRC Method	**Zinc Alloy**	**$3.64**	**None**	**$15/M**	**$11.50/M**

Check the chart; you'll see clear proof of how GRC's DIE CASTING METHOD offers substantial savings on your small parts. The Gries Method delivers parts of high uniformity, with close tolerances . . . ready for use. Assembly and most other secondary operations are eliminated.

Write, wire, phone NOW for GRC's bulletin "Small Die Castings Exclusively"; send prints for quotation.

MAXIMUM SIZES: 1¾" long, ½ oz. NO MINIMUM

GRC GRIES

GRIES REPRODUCER CORP.

World's Foremost Producer of Small Die Castings

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100 ton MIDGET . .

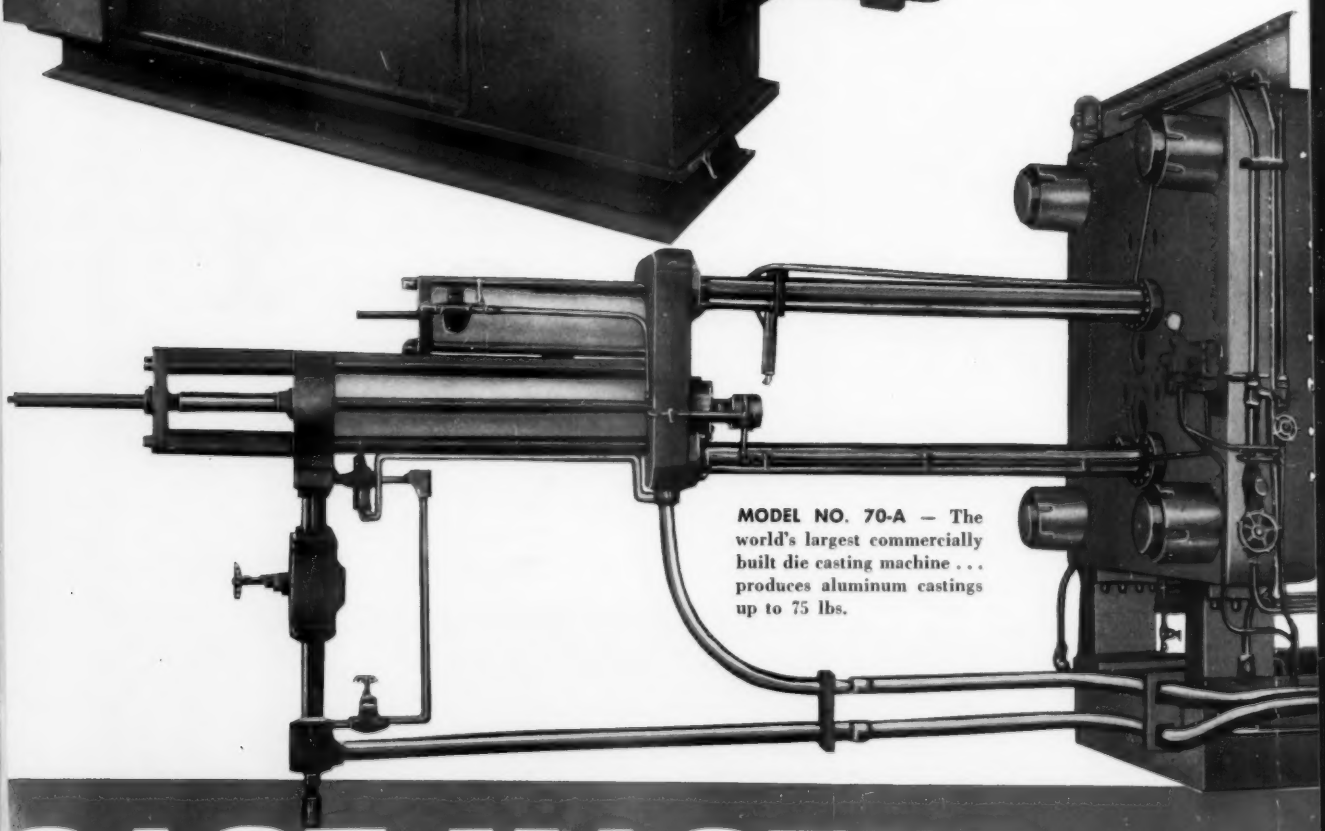
. . . there's a CAST-MASTER

OVER 20 STANDARD MODELS

INCLUDING ZINC, ALUMINUM

AND MAGNESIUM MACHINES

MODEL NO. 7-Z — For zinc, tin or lead. A natural for any die casting shop that specializes in small or medium size castings weighing up to 2½ pounds.



MODEL NO. 70-A — The world's largest commercially built die casting machine . . . produces aluminum castings up to 75 lbs.

CAST-MASTER *inc.*

1200 ton GIANT

to meet every production requirement!

Yes, large or small, there is a CAST-MASTER Die Casting Machine to meet every need. Over 20 standard models — from the smallest to the world's largest commercially built die casting machine. Featuring many exclusive engineering achievements that have proven themselves in years of actual service. For high speed production . . . for top performance in turning out uniform quality castings, you'll find CAST-MASTER sets the pace for the industry.

Design, Production and the Development of Dies

Cast-Master's new expanded operation now offers a complete package . . . jigs, fixtures, dies . . . designed and developed to meet every requirement. Whatever your problem our engineering department is equipped to tackle it. Phone, write or wire, without obligation.

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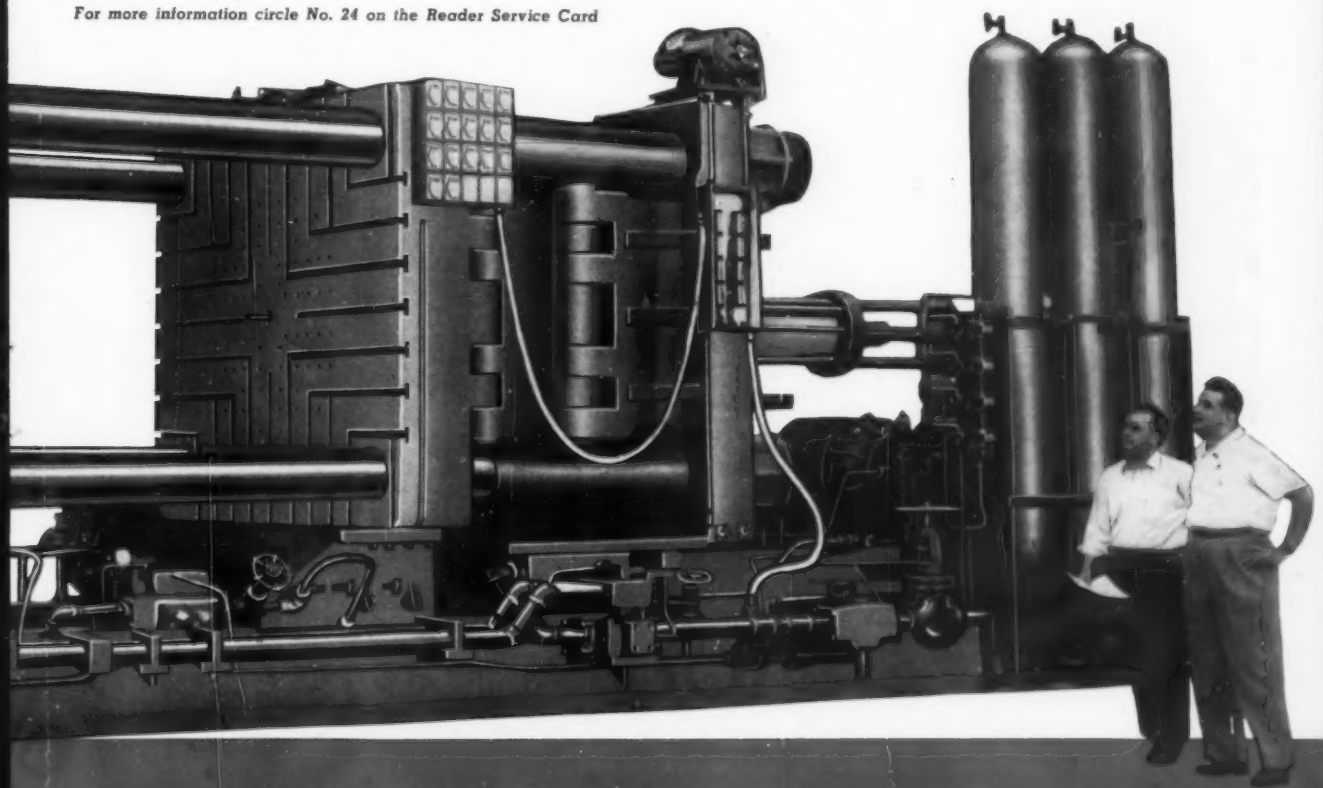
NEW! MULTIPLE CAVITY LOADER-UNLOADER

- *Loads Laminations*
- *Die Casts*
- *Trims*
- *Unloads 4 Rotors Automatically*

A major motor manufacturer gave Cast-Master the job of stepping up production and reducing labor on die-casting laminated rotors. Cast-Master solved the problem with a new automatic loader-unloader.

NEW DETAILED BROCHURE AVAILABLE



23901 Aurora Rd. • Bedford, Ohio

BUNKER HILL

The Zinc that originally put Zinc-Base Die-Castings on a High Level... and has kept them high!

BUNKER HILL ZINC, when its 99.99+ quality came into the market back in 1928, quickly proved to be a boon to the die-casting industry. It enabled die-casters to take full advantage of the inherent merits of zinc-base castings. Bunker Hill pioneered this basic change in the development of the industry. It is still a leader in the production of quality zinc for die-castings.

Today, the die-caster who wants the best is able to get the purest zinc available—Bunker Hill. If you would be interested in *trying out* Bunker Hill, let us know your requirements. We'll put you in touch with a small tonnage supplier.

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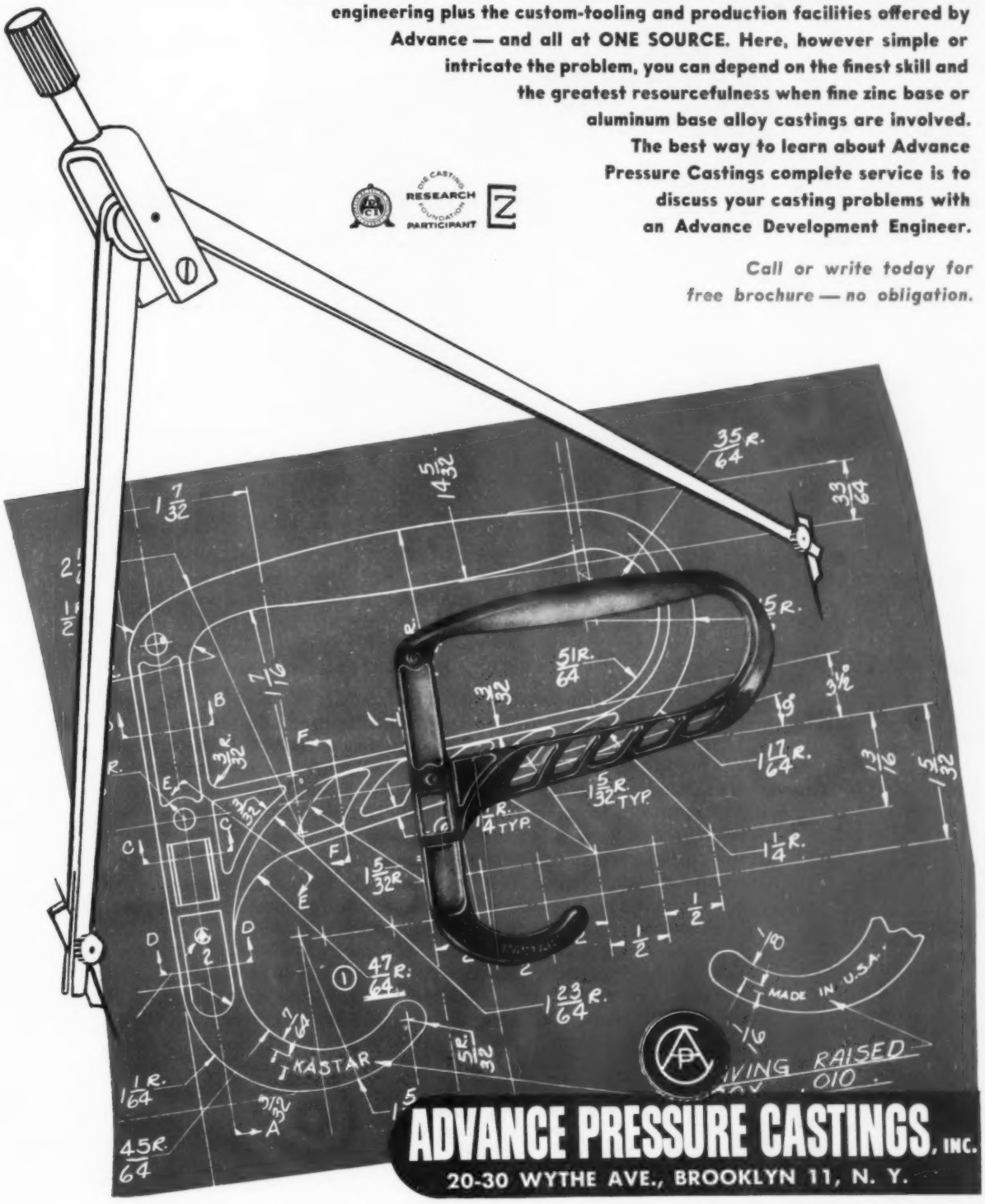
ADVANCE "*COST-PLANNED*" CASTINGS

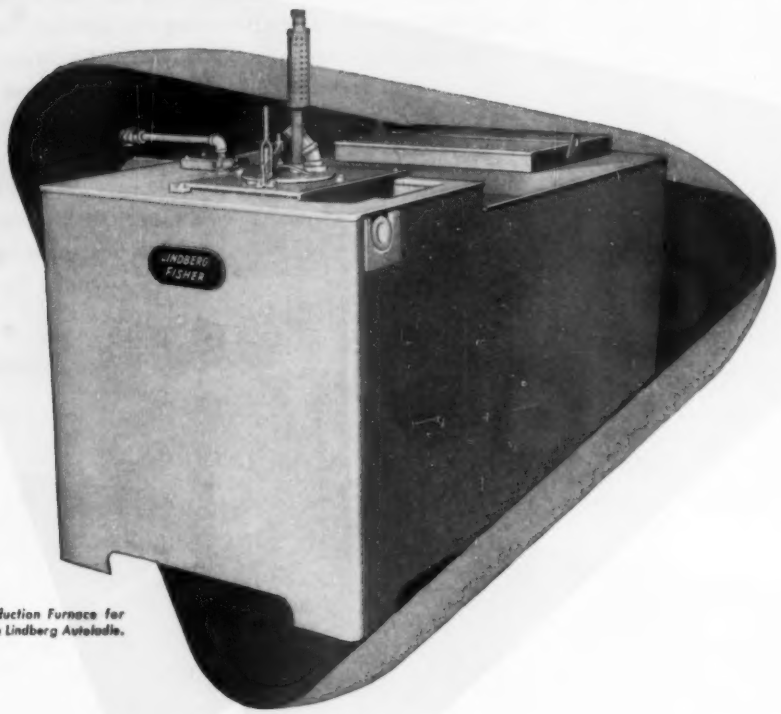
Advance Pressure Castings can take your product at any point in its development and carry it through to finished form. Every step of the way from blueprint to delivery of the finished product, your castings need the rich background of inventive engineering plus the custom-tooling and production facilities offered by Advance — and all at ONE SOURCE. Here, however simple or intricate the problem, you can depend on the finest skill and the greatest resourcefulness when fine zinc base or aluminum base alloy castings are involved. The best way to learn about Advance Pressure Castings complete service is to discuss your casting problems with an Advance Development Engineer.

Call or write today for free brochure — no obligation.



For more information circle No. 3 on the Reader Service Card

Here's the ideal combination for casting aluminum automatically



Lindberg-Fisher two-chamber Induction Furnace for melting and holding equipped with Lindberg Autoladle.

Do you die-cast aluminum? Then take Lindberg's famous two-chamber induction melting and holding furnace, add "Little Joe" Lindberg's new automatic pump, and you'll have the most efficient automatic combination anywhere. The Lindberg-Fisher two-chamber furnace *melts* in one chamber, *holds* metal at precisely the right temperature in the other chamber, and "Little Joe" automatically delivers exactly the right size shot to the casting machine. With this combination all handling of molten metal is eliminated, perfect control of metal temperatures and shot size is maintained, and all automatically. For safer, more economical, more precise handling of aluminum or any non-ferrous metals or alloys better see Lindberg. Just get in touch with the Lindberg plant or the Lindberg Field Representative in your locality, or write Lindberg-Fisher Division, Lindberg Engineering Company, 2463 West Hubbard St., Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Ave., at Downey, California.

LINDBERG heat for industry

For more information circle No. 62 on the Reader Service Card

If you apply heat to aluminum LINDBERG can show you the better way

Lindberg-Fisher electric resistance melting and holding furnace with Lindberg Autoladle automatic pump.

Heat and aluminum have been Lindberg's twin babies for many years. If the manufacture of your product requires the application of heat to aluminum anywhere along the line we can help you do the job better. For years our engineering and research staff has been creating improved methods and developing more efficient equipment in this field.

Most recent development is the Autoladle (we call it "Little Joe"), the first practical automatic aluminum ladling unit yet devised. Used with Lindberg melting and holding furnaces "Little Joe" (shown at the right) makes automatic casting of aluminum fast, dependable and economical.

Lindberg's Melting Furnace Division makes a wide variety of melting and holding furnaces for aluminum, brass, bronze, tin, zinc, lead and other non-ferrous metals. These include aluminum induction, nose-pouring crucibles, electric resistance holding furnaces and big reverbs. For foundry, permanent mold or die-casting plant, independent or captive, there are Lindberg melting and holding furnaces to fit your requirements. If your problem in this field needs a special solution Lindberg's design staff can find it. Just get in touch with the Lindberg plant or the Lindberg Field Representative in your locality, or write Lindberg-Fisher Division, Lindberg Engineering Company, 2463 West Hubbard St., Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Ave., at Downey, California.

LINDBERG heat for industry

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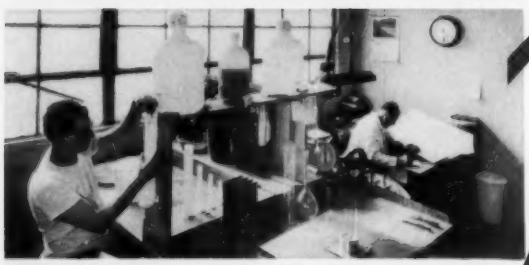

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No Job Too Complicated

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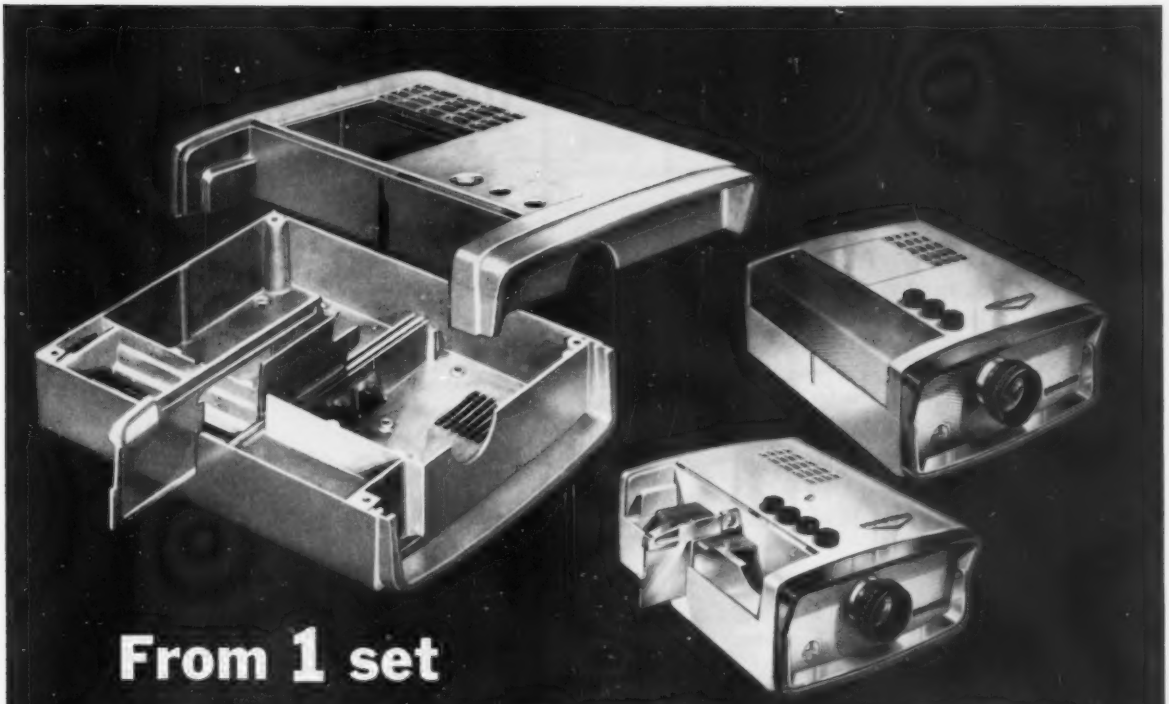

From 1 set of die castings Brumberger makes 2 different products

CASE HISTORIES FROM MT. VERNON FILES

If you like to project color transparencies, these two new automatic Brumberger* 35 mm, low silhouette, slide projectors will dazzle you. They are priced much lower than other automatic projectors and eliminate the additional expense of slide magazines and extra carrying case.

These are fine examples of keen engineering perception, for all the inherent advantages of die casting have been applied with those of metal stampings and plastics to produce competitively priced photographic products of outstanding eye appeal and performance.

As you can see, these aluminum die castings are intricate. All the necessary slots, channels, pins, gratings, bosses, holes, compartments, handle holes and various recesses are incorporated into the shells so that simple, rapid assembly and minimum finishing operations of the final product result.

Heat from the projection lamp will not warp or weaken the castings, and correct alignment of the optical system is maintained at all times by the thin but rigid, lightweight sections. For Brumberger, die casting has proved to be a supremely advantageous manufacturing method.

More than that, Brumberger has made full use of Mt. Vernons' complete four-fold service: coordinated designing, die making, casting and machining facilities all under one roof in 200,000 square feet of manufacturing space.

And when you plan to make a better product at lower cost by resorting to die castings, we can also give you invaluable help. Just call in your nearest Mt. Vernon sales representative for fast service.

*Brumberger — Brooklyn, N. Y.

MT. VERNON
DIE CASTING CORP.
STAMFORD, CONNECTICUT

RESEARCH PARTICIPANT

SALES REPRESENTATIVES

BIRMINGHAM, ALA.: Mr. I. B. Armstrong, Jr., P. O. Box 2244
BROOKLYN, N. Y.: Mr. Robert V. Moore, 2317 Plumb 2nd St.
CLEVELAND, OHIO: Mr. Grant Eller, 6 East 194th St.
GUILDERLAND, N. Y.: Mr. David H. King, 75 Willow St.
LUTHERVILLE, MD.: Mr. C. McIntosh Gordon, Box 55, R.R. No. 1
PITTSBURGH, PA.: Mr. Andrew W. Anderson, 300 Pasadena Drive So.
QUINCY, MASS.: Mr. Edmund W. Libby, 91 Merrymount Rd.
ROCHESTER, N. Y.: Mr. William Sauers, 101 Briarcliff Rd.
SKANEATELES, N. Y.: Mr. Jerome J. Theobald, 9 E. Genesee St.
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DIE CAST SMALL PARTS

(up to 1 lb. capacity)

FASTER — Average production rates are **600-1,000 shots per hour**...operating **continuously,** hour after hour, day after day!

BETTER — More **"hardware" quality** die castings are produced on **DCMT machines** every year than on any other die casting machines!

FOR LESS — Lower **machine** cost, **die** cost, **per-piece** cost, **maintenance** cost...and lowest **floor space utilization** per casting mean that you can bid for a **larger share** of the growing up-to-one-pound die casting market!

new

DCMT IMP/96 mk II

America's most widely used

DIE CASTING MACHINE

Write today for illustrated booklet

DCMT SALES CORP., Dept. DA 369
Division of British Industries Corp., Port Washington, New York
Gentlemen: Please send IMP/96 mk II booklet.

Also send literature on these other DCMT die casting machines:

☐ **RAM Automatic** (fully-automatic)

☐ **ADC 56 Rotorcaster** (for casting aluminum around rotors of small motors)

NAME _____

TITLE _____

COMPANY _____

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B.I.C. ENDORSED QUALITY

DCMT SALES CORP.
Division of British Industries Corp.
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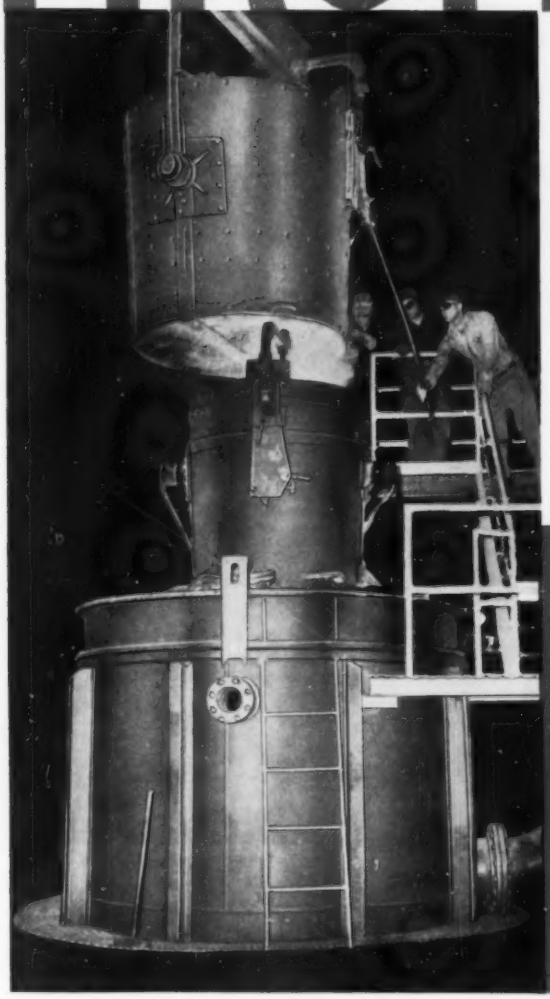
For more information circle No. 19 on the Reader Service Card

FIRST with VACUUM DEGASSING in die casting die steels THERMOLD AV



For your most exacting die casting jobs, Thermold AV gives you the assurance of highest quality by the use of the ultimate in melting technique—vacuum degassing.

Now large size ingots are vacuum degassed in standard production processing—the first tool steel degassing installation in the United States.

This new advantage is in addition to quality controls that have set the standard for the industry—small batch furnace melting, close control of press forging and annealing, and 100% Reflectoscope testing.

With this contribution to the high quality of Thermold AV, Universal-Cyclops gives further assurance of homogeneity of structure, freedom from gaseous impurities, high polishing quality and the utmost resistance to thermal and mechanical fatigue.

Write for new bulletin.

A heat of Thermold AV being processed in the vacuum degassing installation.

A block of Thermold AV measuring 18" x 36"x 48". One of the largest forged blocks of high alloy die casting die steel ever produced—typical of sizes available vacuum degassed.

UNIVERSAL CYCLOPS
STEEL CORPORATION
BRIDGEVILLE, PA.

TOOL STEELS • STAINLESS STEELS • HIGH TEMPERATURE METALS

FOR YOUR NEXT CRITICAL DIE CASTING JOB, GET IN TOUCH WITH YOUR NEAREST UNIVERSAL-CYCLOPS SALES OFFICE OR WAREHOUSE.

Buffalo	Dayton	Indianapolis	New York	Rock Island	Titusville
Chicago	Detroit	Los Angeles	Philadelphia	St. Louis	Washington, D.C.
Cleveland	Hartford	Milwaukee	Pittsburgh	Syracuse	Worcester

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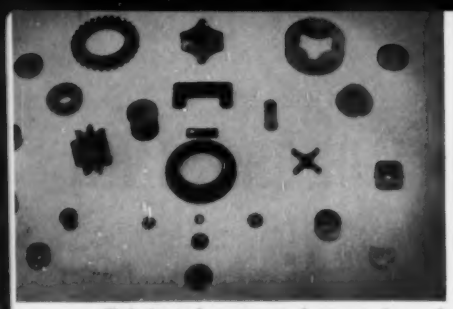
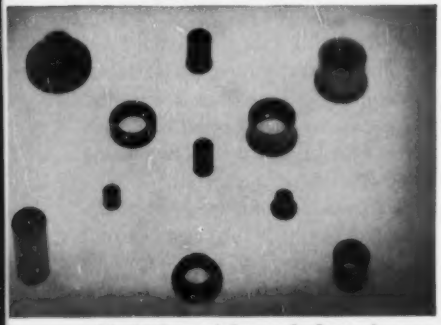
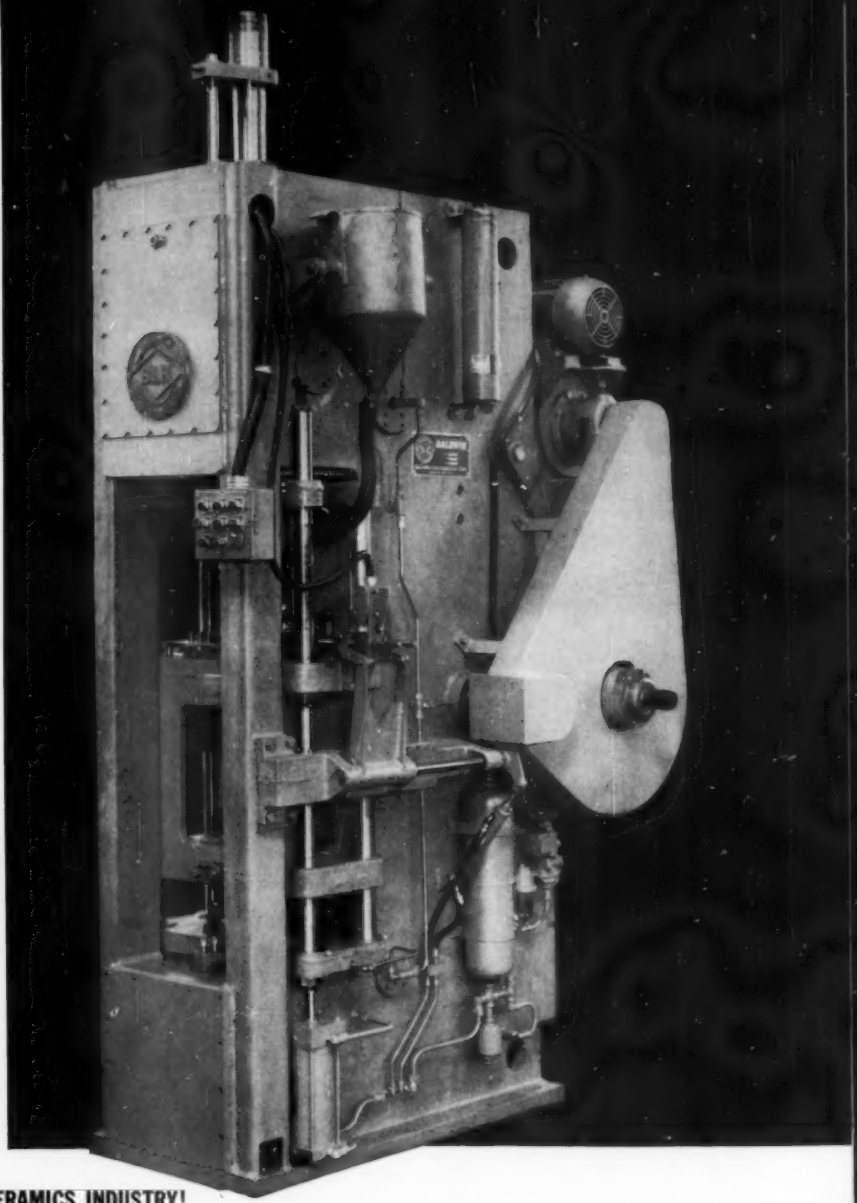


Fabricated parts and gears formed on Baldwin Compacting Presses.



Typical straight and flanged powdered metal bushings made on Baldwin Compacting Presses.

Other parts being made at United States Graphite on Baldwin presses. The double hub and counterbored parts are test pieces. Others are production items.



ATTENTION POWDERED METALS AND CERAMICS INDUSTRY!

Baldwin's new, low-cost compacting press specifically designed to meet your needs

Baldwin-Lima-Hamilton Corporation's 100 years' experience and know-how in designing and building hydraulic presses has been incorporated into the new 50W low-cost compacting press.

Its 1-piece frame and floating die deliver the same uniform pressure, the same rigid 4-point guiding, as our regular heavy duty 4-column hydraulic presses. The 50W is designed for versatility—extra motions may be added as requirements become more complex, without the need for additional machining.

Rated pressure of the Baldwin Model 50W is 50 tons, with a 25-ton ejection capacity. Stroke is adjustable through its entire fill range of 0 to 4½ in. For complete details, including specifications, write to the Hamilton Division, B-L-H Corporation, Hamilton, Ohio.

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BALDWIN BLH LIMA-HAMILTON

die cast from TADANAC ZINC

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An automobile horn may startle and annoy you . . . or it may save your life!

Following the curve of the steering wheel just inches away from the driver's hand, the horn ring on a modern automobile stands ready to sound a warning to pedestrians and other vehicles. It's strong, attractive and durable—die cast in Zinc!

For flexibility of design, combined with the economy of accurate, low temperature, high speed operation, die casters choose alloys of Zinc. And, for consistent high quality, assured supply and prompt delivery, Tadanac Zinc is the preferred brand for die casting alloys!

If you require information or assistance regarding your Zinc die casting operations, contact our Technical Service Staff. Your inquiries will receive prompt attention.

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TADANAC ZINC SHAPES THE THINGS TO COME

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"They also curtail corrosion . . . provide longer pump life and valve wear."

"In our hydraulic die-casting operation—involving open flame, temperatures to 1,400 degrees F, and molten metals—we consider it absolutely essential to use flame-resistant Cellulube for power transfer," continues Mr. Parker. "And with Cellulube we have no gummy valves, clogged strainers, or corroded reservoirs that characterized some of the fluids we formerly used."

This performance is typical of what you can expect from Celanese Cellulubes, which were developed to assure the safety of fire-resistance, with excellent lubricity and the dependability of unchanging operational viscosity. They are available in six controlled viscosities: 90, 150, 220, 300, 550, and 1,000 S.U.S. at 100°F.

Why not evaluate Cellulubes for your own operations? Just use the coupon to describe the application you have in mind and request technical data and samples.

Celanese® Cellulube®

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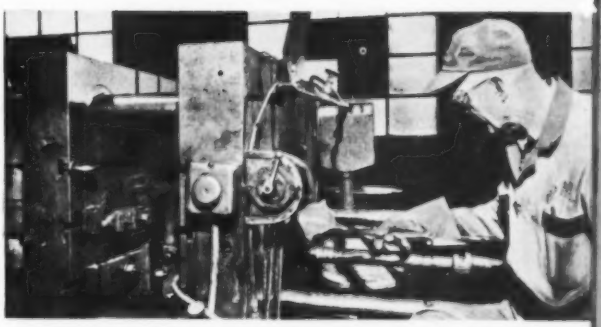
our insurance disaster"

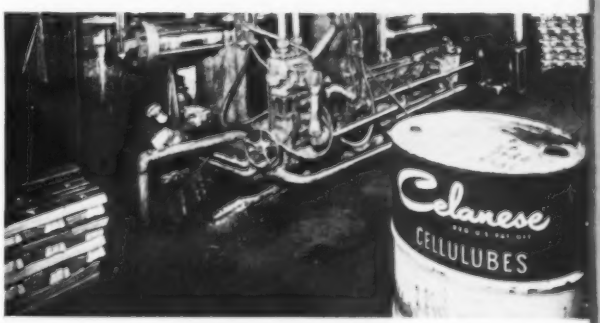


BETWEEN THIS . . .

Operator ladling molten metal into the shock chamber of 400-ton die casting machine. "Given the tremendous pressures under which the hydraulic fluid forces the ram home . . . we must prepare against a possible line rupture. It is vitally important that we use fire-resistant Cellulube in this operation."

AND THIS . . .

Operator removing a casting from opened die. When the ramming operation is completed, the Cellulube is by-passed to the reservoir, ready for the next one. "Open flame coupled with leakage sometimes resulting from the tremendous pressures creates a serious hazard. Cellulube is our insurance against this hazard . . ."



. . . THIS!

Cellulube 150 is used in the Parker White Metal Company's 400- and 500-ton die-casting machines. Each machine uses 100 gallons of Cellulube. "Its performance has been completely satisfactory . . ." says Richard A. Parker, Chief Engineer.

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Celanese Corporation of America, Chemical Division, 180 Madison Avenue, New York 16, N.Y.
In Canada: Canadian Chemical Co., Limited, 2035 Guy Street, Montreal, P. Q., Canada.
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CELANESE CELLULUBES

Why You'll Like Cromo-High V For Long Production Runs

When die-casting zinc, aluminum or magnesium, you can count on long production runs from dies made of Cromo-High V—Bethlehem's 5 pct chrome-moly tool steel, with 1 pct vanadium.

Engineered for long service, Cromo-High V has extra toughness, and resists both wash and erosion. Cromo-High V is made by a controlled melting procedure. Uniformly annealed, it's easy to machine. It also has good center density and grain refinement, and is free from porosity.

Cromo-High V is ultrasonic-tested for quality. It responds uniformly to heat-treatment. You can also count on uniform heat-treatment in massive sections to a hardness of Rockwell C45-47.

It all adds up to a top-choice steel for those long runs. Plan now to give Cromo-High V a workout. Your Bethlehem tool steel distributor has this fine grade in stock, and will be pleased to work closely with you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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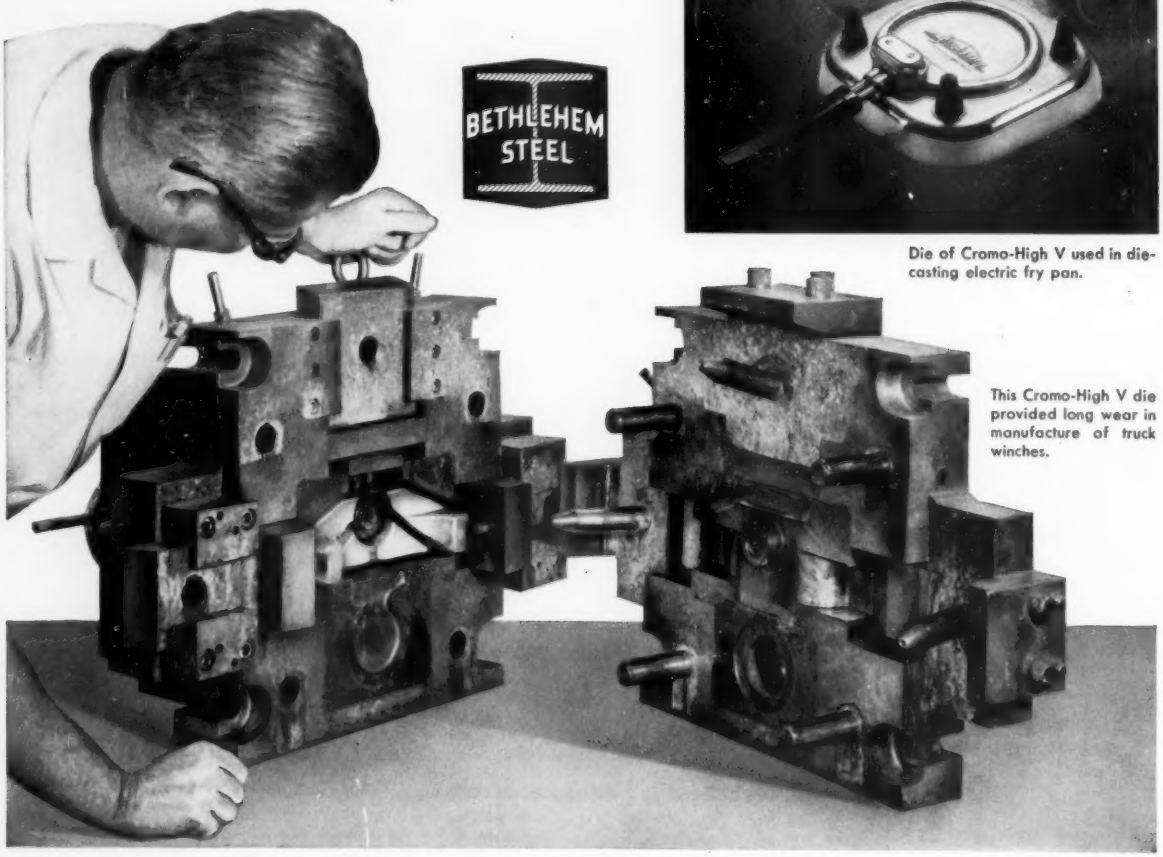
Die of Cromo-High V used in die-casting electric fry pan.



This Cromo-High V die provided long wear in manufacture of truck winches.

BETHLEHEM TOOL STEELS

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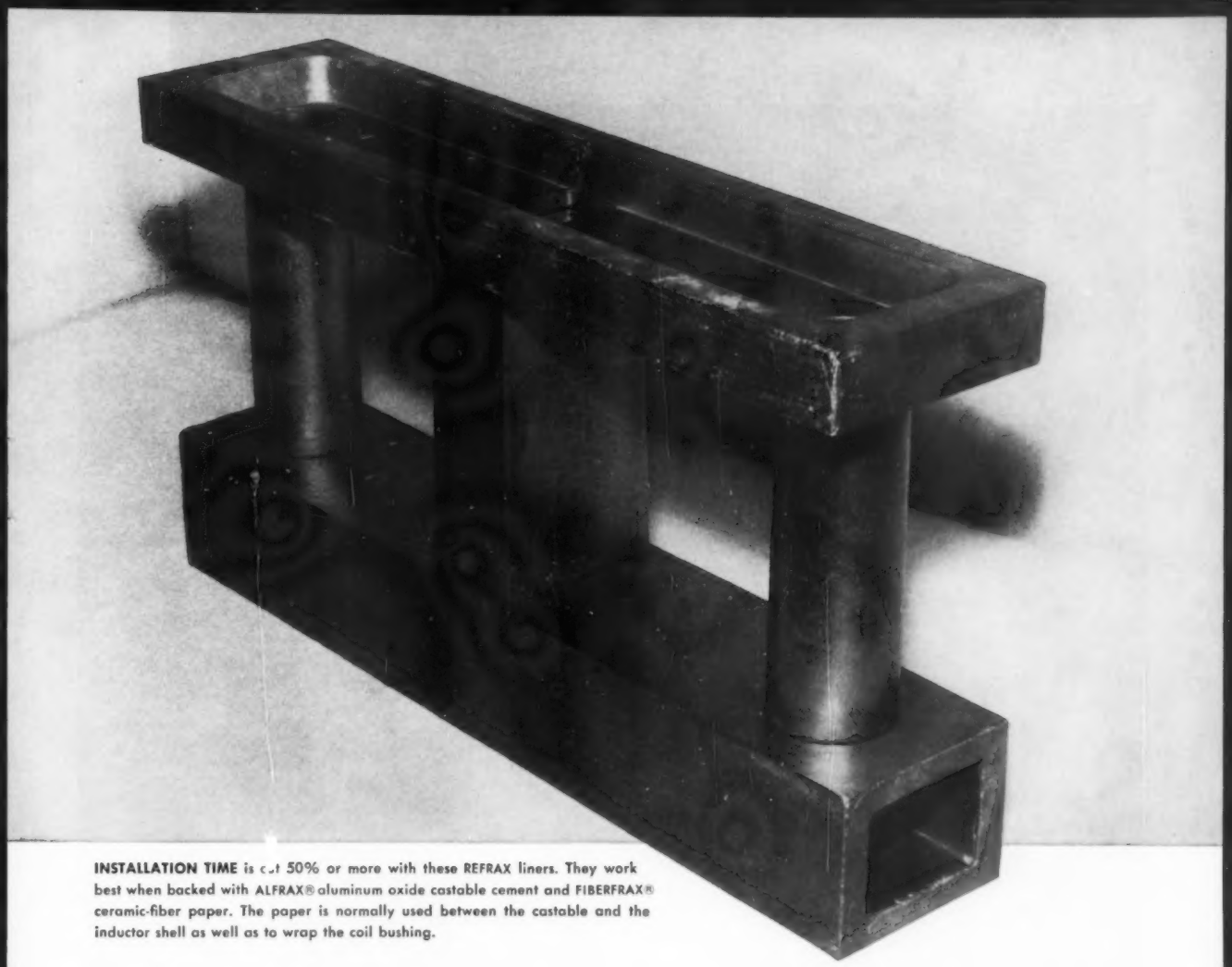

INSTALLATION TIME is cut 50% or more with these REFRAX liners. They work best when backed with ALFRAX® aluminum oxide castable cement and FIBERFRAX® ceramic-fiber paper. The paper is normally used between the castable and the inductor shell as well as to wrap the coil bushing.

When Ajax-Tama-Wyatt inductor units melt aluminum, this

REFRAX® liner stops dross penetration

Here's a new channel lining for Ajax-Tama-Wyatt inductors that lasts longer than other materials . . . cuts cleaning and assembly time . . . reduces melting costs. It's REFRAX® silicon-nitride-bonded silicon carbide.

Dross can't penetrate and adhere to REFRAX liners because aluminum *can't wet* this refractory. Its smooth surfaces and low permeability stop metal penetration and build-up in the vertical and horizontal channels. As a result, the channels don't get progressively smaller and more difficult to clean —as they do with cast or rammed materials.

And the normal 8 or more hours it takes to ram a lining in an Ajax inductor has been sliced to 4 by using REFRAX channel liners (with ALFRAX® castable back-up cement).

REFRAX refractories can be formed into intricate parts—threaded, thin section, close tolerances—with outstanding corrosion resistance (even at temperatures well over 2,000 F). Consider, too, these properties: Tolerances of ± .005 in./in.; a modulus of rupture of 5600 psi at 2450 F (even the best heat resistant alloy melts below this temperature); and high heat conductivity that approaches that of chrome-nickel steel. Write today for further information about the outstanding properties of REFRAX refractories. Address Dept. R-19, Refractories Division, Carborundum Company, Perth Amboy, N. J.

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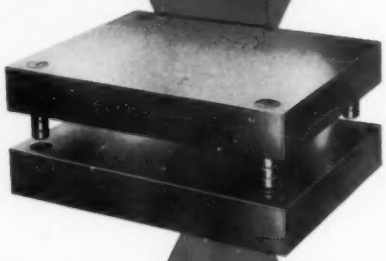
D-M-E STANDARD
Water-Cooled
SPRUE BUSHINGS

DIE CASTERS!

SAVE MONEY ON YOUR DIE CASTING DIES

D-M-E Standards can save you time and money on every die with less initial cost and longer die life.

D-M-E STANDARD
Water-Cooled
SPRUE SPREADERS



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Wide Range of Standard Sizes

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Standard plate thickness from ⅞" to 5⅛".

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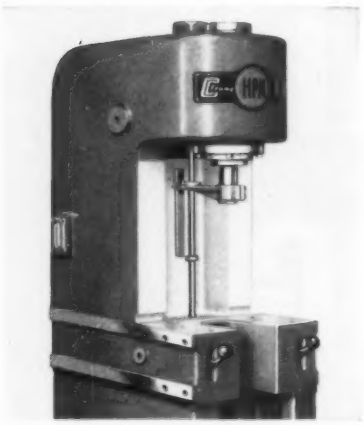
D-M-E OF CANADA	156 NORSEMAN AVE.	TORONTO, ONT.

For more information circle No. 41 on the Reader Service Card

KIOWA CORPORATION, MARSHALLTOWN, IOWA, SAYS, "The advanced principles of the H-P-M die casting machines have solved many of our quality problems and our day-to-day die maintenance problems have been reduced."

Better quality . . . less scrap . . . consistently

H-P-M's solve die casting quality problems through advanced machine design principles



TOPS FOR TRIMMING: The new H-P-M manually controlled C-Press is tops for quick, clean hydraulic trimming of casting flash. Generous bed areas, dual safety controls, either lever or electrical, 5, 10, and 15 ton models, completely JIC for easy maintenance, **standard at no additional cost.** Send for new catalog just off the press.

Two major H-P-M die casting machine advancements offer unlimited opportunities for casting improvement:

(1) H-P-M's mechanical link-wedge clamping mechanism prestresses the machine's structural members for rigid clamping — lessens deflection when metal is injected under pressure.

(2) new injection speed control is infinitely adjustable for acceleration, high speed and pressure follow through.

With the first advantage, density factors and dimensional tolerances are held to exact requirements. Flash is reduced to the minimum and scrap loss is reduced to a negligible factor.

With the second, intricate detail can be faithfully reproduced time and time again with smooth surface finishes "the rule" rather than the exception. Pressure follow-through control packs metal for proper density.

These two difficult problems of the die casting industry have been top considerations with the H-P-M line of high speed die casting machines — available from 200 to 800 ton capacities. Get the facts on better casting control with H-P-M's, today.

THE HYDRAULIC PRESS MFG. COMPANY

A Division of Koehring Co. • Mount Gilead, Ohio, U. S. A. H933

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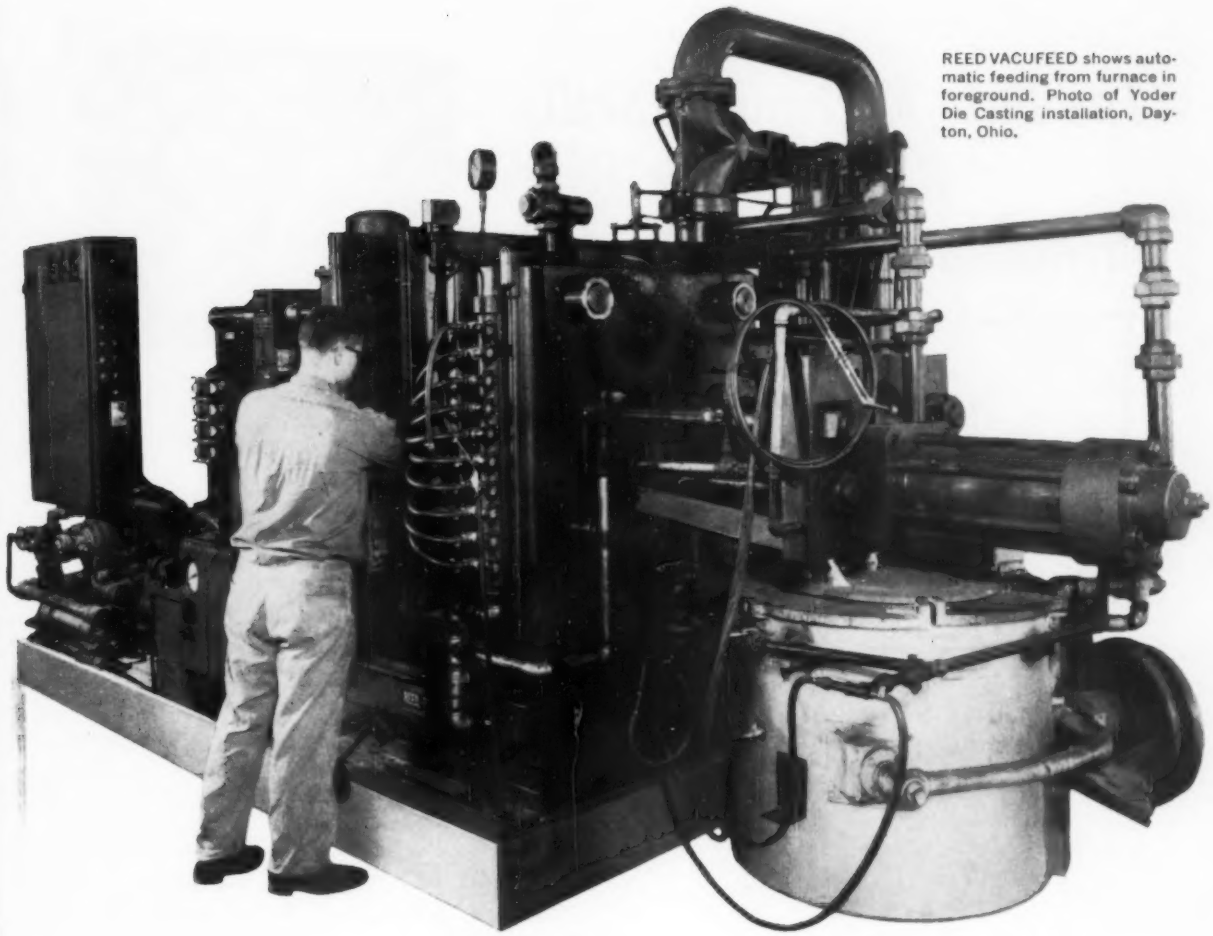
From Reed-Prentice:
Vacuum Die Casting
of

ALUMINUM

with

FULLY AUTOMATIC FEEDING



REED VACUFEED shows automatic feeding from furnace in foreground. Photo of Yoder Die Casting installation, Dayton, Ohio.

A major advancement in aluminum die casting —the Reed-Prentice VACUFEED system features fully automatic feeding of aluminum. Proven in production, only REED VACUFEED brings you all the advantages of hood-type vacuum die casting. Now, with aluminum, you can:

- Use alloys which give you greater physical properties
- Produce thinner walled castings than possible on conventional machines
- Cast silicon-free aluminum alloys which can be decoratively color anodized
- Feed metal faster than any other ladling method
- Cast clean metal with all inclusions, including oxides, removed
- Draw directly from shielded metal strata

Ask your REED *Sales Engineer for all the facts on the* VACUFEED *or contact Reed-Prentice at East Longmeadow, Mass.*

REED-PRENTICE

division of

PACKAGE MACHINERY COMPANY

EAST LONGMEADOW, MASSACHUSETTS

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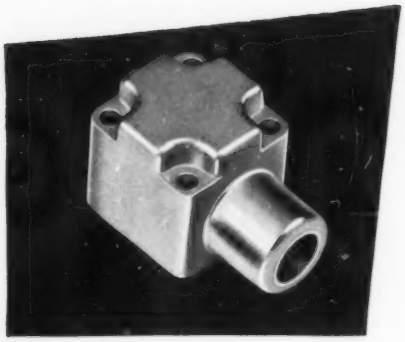
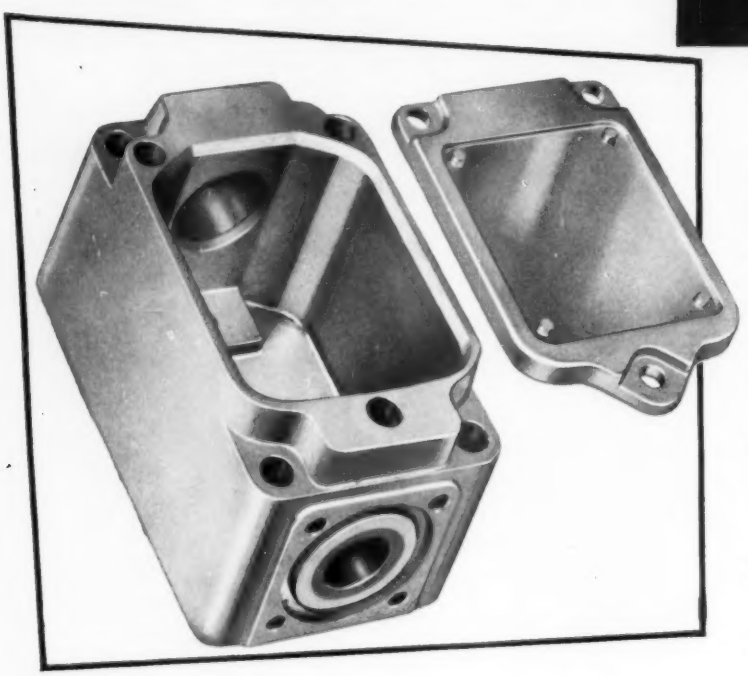
The Rare Mechanical Skills Required Are Both Predominant and Seasoned



One of the Add-Ons for the main switch housing



Unusual switch parts—requiring seasoned mechanical skills for full process utilization.

at Madison-Kipp

for zinc and aluminum die castings

Full process utilization is the telling factor in the advanced die casting process. Outstanding and rare mechanical skills are required for best results. Such skills at Madison-Kipp, from preliminary blue print analysis through die designing, die making and die casting have been helpful to highly placed product designers and engineers for over a quarter century.

Please clip this ad as a reminder to contact us when you have die casting requirements.

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Skilled in Die Casting Mechanics • Experienced in Lubrication Engineering • Originators of Really High Speed Air Tools

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Your surest start for fine die casting: Federated-Asarco Di-Metal is made from special high grade zinc, electrolytically refined by Asarco-developed processes. Production is now concentrated "under one roof" at Corpus Christi, Texas, one of the world's largest high grade zinc producing plants. Integrated production—controlled from mine to finished alloy—assures you of lower cost materials, and the highest purity and uniformity of zinc Di-Metal. Federated can serve your needs through 22 sales offices. There's one near you. Federated Metals Division, 120 Broadway, New York 5. In Canada: Federated Metals Canada, Ltd.—Toronto and Montreal.

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AMERICAN SMELTING AND REFINING COMPANY

THESE BLUE CHIP THE HYDRAULIC

because:

- ✓**PUSH BUTTON CONTROL** permits simplicity and flexibility in adjusting fill, pressure, ejection, timing to suit the part being made.
- ✓**BUILT IN BALL BEARING LEADER PIN GUIDE BARS** between both the upper punch holder and the die table, and the lower punch holder and die table provide and maintain perfect tooling accuracy.
- ✓**POSITIVE MECHANICAL PRESSURE STOP MECHANISM** for holding dimensional thickness, or hydraulic pressure control for true density can be utilized.
- ✓**SECONDARY LOWER PUNCH MECHANISM** for use in pressing and/or ejecting.
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- ✓**22 DESIGN INNOVATIONS** that make possible the production of the most complex parts.
- ✓**FULL RANGE OF SIZES** from 50 to 500 tons.

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COMPANIES HAVE RECENTLY INSTALLED ALL-NEW KUX POWDERED METAL COMPACTING PRESSES

Also builders of a full range of die casting machines . . . from 25 tons to 1000 tons in size.

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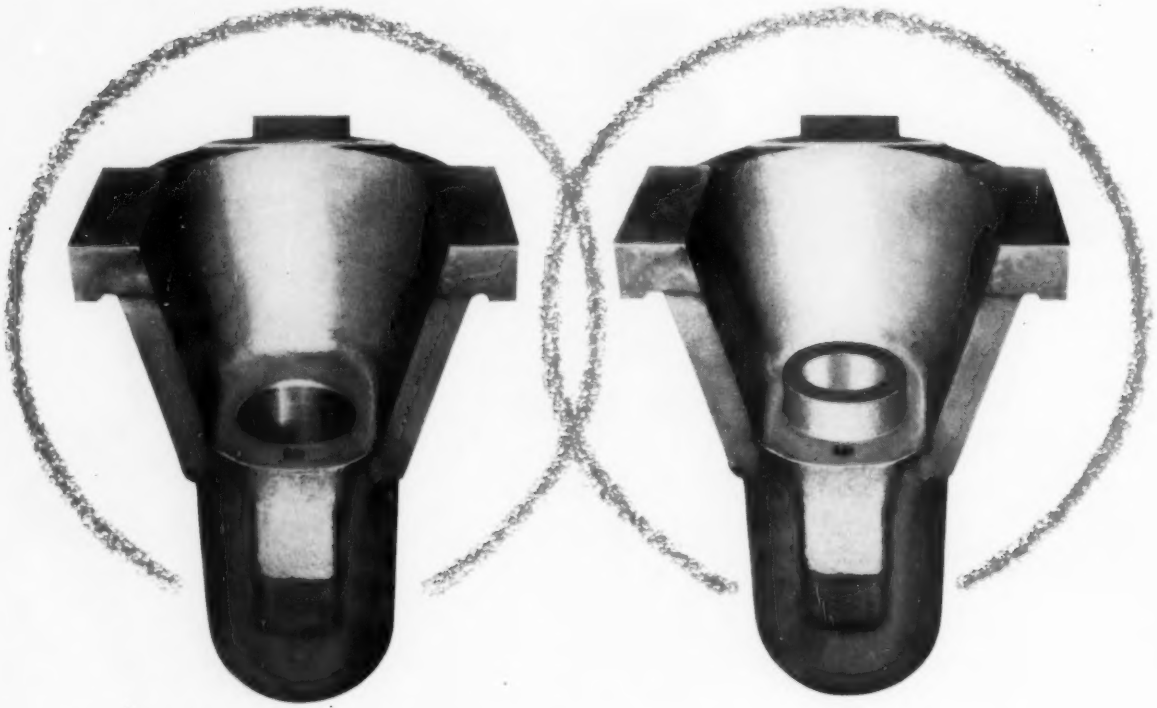
NOW...

Dodge Gooseneck Resleeving Service



Now available to die casters everywhere is Dodge's "near-as-your-phone" service for resleeving *any* type or make of gooseneck quickly . . . efficiently . . . economically.

If you are tired of long delays, inadequate materials and poor workmanship, we invite you to investigate the advantages of this newest Dodge service . . . *now*.

Sleeves are normally furnished in Nitralloy® 135 mod., nitrided to Rockwell 62-64 "C" and honed (or other material if specified). All sleeve I.D.'s are nominal—we machine to your requirements. For peak performance, all sleeves are inserted with a .004-.006" shrink fit.

To help speed delivery, Dodge stocks a wide range of "standard" goosenecks and sleeves.

Why not look into this unique resleeving service today? Call us without obligation for price and complete details, or write.

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THE MOST IMPORTANT ALLOY IN A STEEL CASTING IS QUALITY

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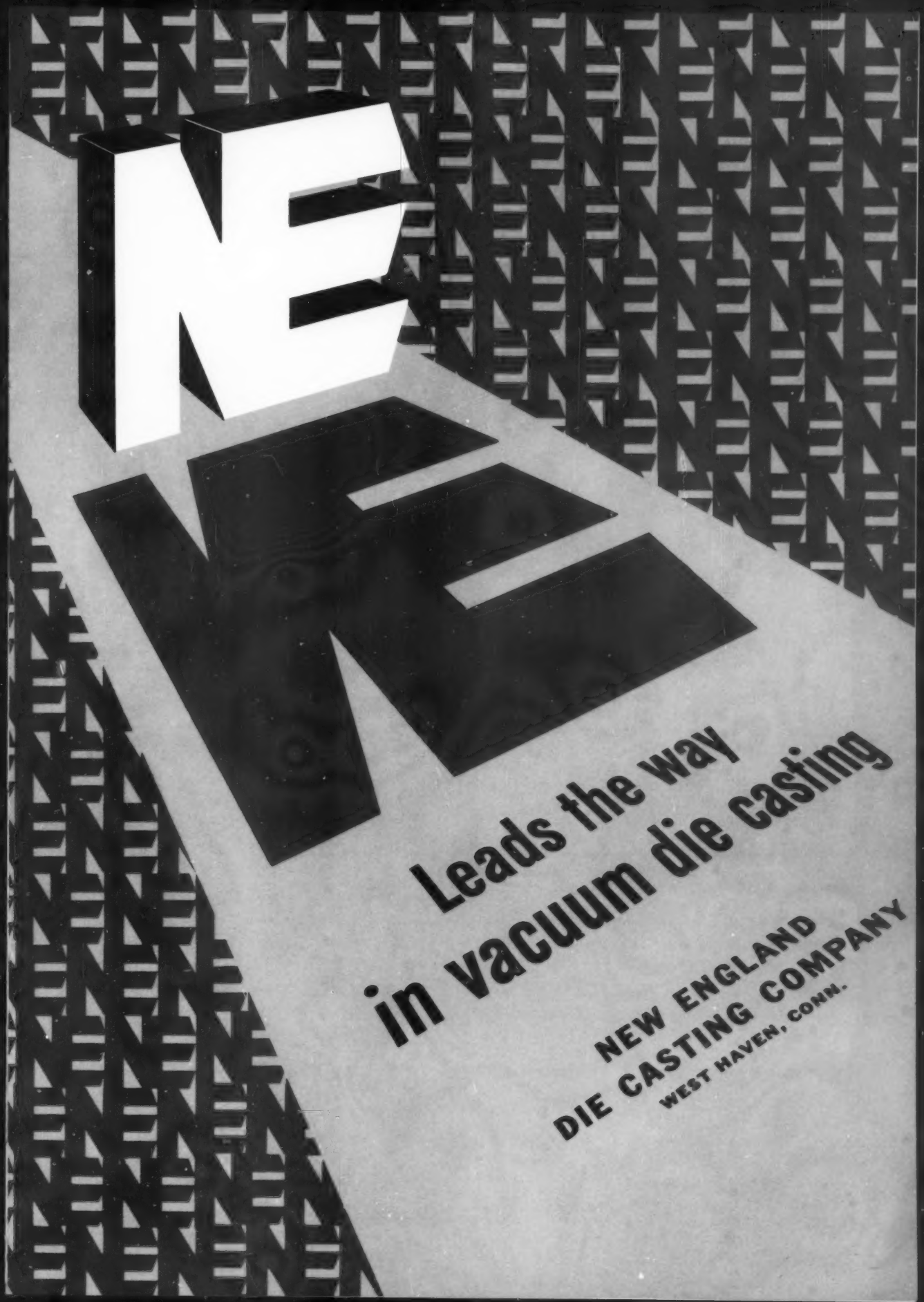
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Leads the way
in vacuum die casting
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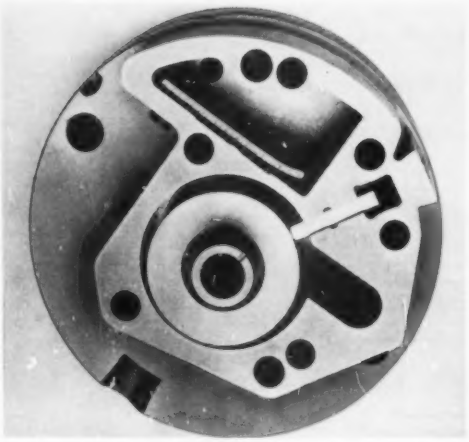


1. OIL STORAGE due to the natural porosity of this sintered iron part assures good lubrication at all times.

2. WEAR RESISTANCE AND STRENGTH are both primary requirements for this part. That's why an infiltrated iron sintering is used.

For lower costs and unique properties . . .

Sinterings Are The Choice

WHEN General Electric Co. engineers design equipment they study all possible methods of manufacture and all kinds of materials. Only the best will do when parts are sealed away where they can not be reached for repair or replacement. That's why two vital parts, one in the room air-conditioner and the other in a heat pump, are made as sinterings. Not only are they better for the intended use when made of powdered iron. they also cost less.

Figure 1 shows the cylinder of a sliding-vane pump for a room air conditioner. At the time they designed it, GE engineers estimated the cost of making the part by several different metal forming methods. The choice finally was brought down to either an iron casting or a sintering from powdered iron. An analysis of manufacturing steps showed this:

As A Sintering	As An Iron Casting
Press and sinter	Cast and trim
Grind cylinder wall	Machine and grind cylinder wall
Face parallel sides	Face parallel sides
Broach vane slot	Drill bolt holes
	Machine all other body cavities

When the costs of completed cylinders were compared the iron sintering turned out to be 30% lower. But money wasn't all. Special jigs and fixtures, which would be needed to machine the casting, were not needed with the sintering. Expensive machine tools were not tied up. There were no special purpose tools to land in the scrap heap if the design was changed.

The pump lubricates perfectly when it is running. After a shut-down the oil would drain away from a cast cylinder. The natural porosity of the sintered cylinder (it meets ASTM specification B202-55t (Type 2, Class A-1)) serves as an oil reservoir. The pump never operates without adequate lubrication.

The spider for the heat-pump (figure 2) is another part that is sealed away from possible repair. The spider acts as a guide and backer for the discharge valve and supports a portion of the valve plate assembly. The part must be strong. It must resist wear because it has to withstand the scuffing of the hardened-steel discharge valve.

Normally such a part would be made as a forging, machined, ground, and hardened. The cost by this method, however, was found to be excessive.

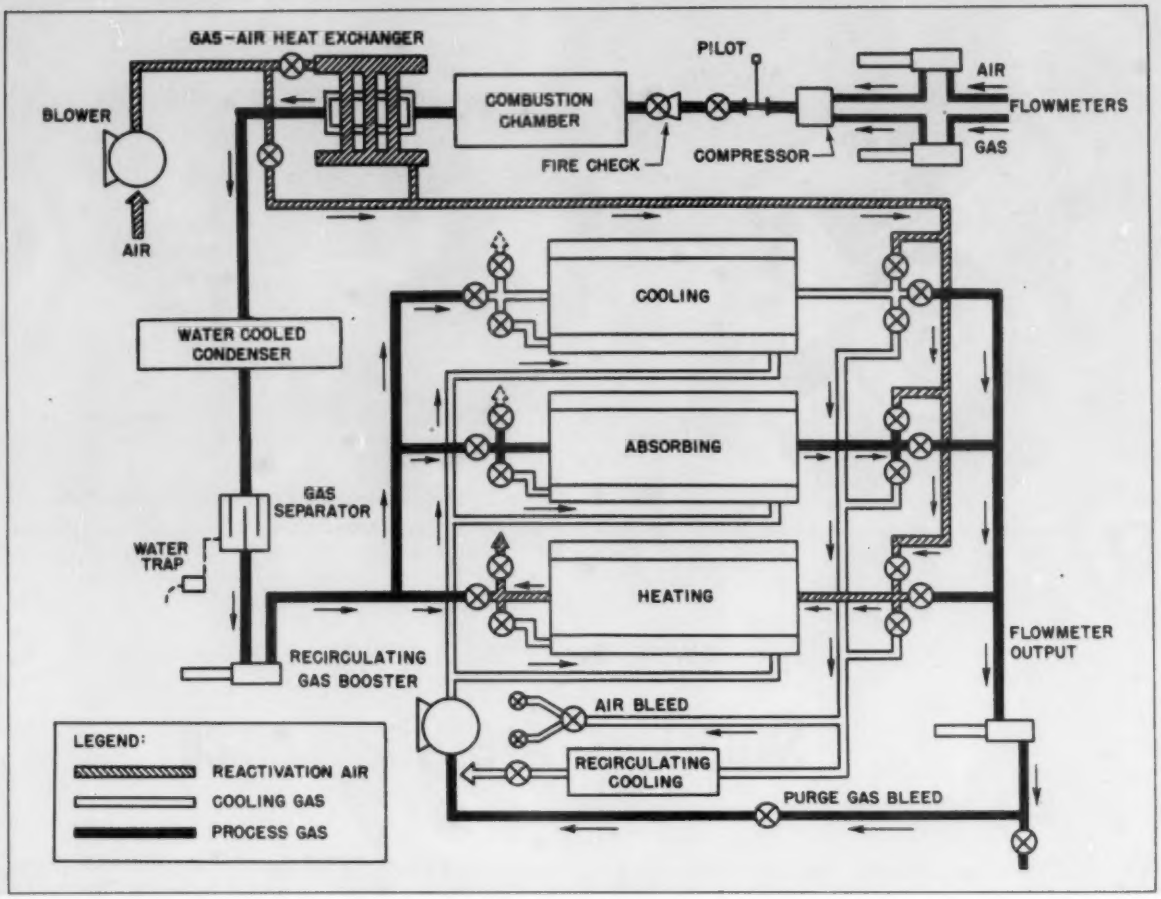
A custom producer of sinterings proposed an infiltrated iron part. The material: SAE Type 7 (ASTM B-303) iron base composition. This would have a finished composition of 70% to 85% iron, 15% to 25% copper, and 0.25% to 0.60% combined carbon. It is easily machined in the annealed condition and can be hardened.

The spider supplied to GE has a density of 7.1 to 7.6 g/cc, an ultimate tensile strength of 75,000 psi, a yield in compression of 90,000 psi, an elongation in 1 in. of 1.0% and a hardness of 50 to 70 Rockwell B.

The part needs no machining before hardening. Heat treatment is simple. Heat to austenizing temperature; quench to produce a martensitic structure. Properly heat treated, the spider has a micro hardness of 60 to 65 Rockwell C and a tensile strength as high as 150,000 psi.

After hardening the front and back surfaces are lapped.

The finished spider costs at least 70% less than a forged part.



FLOW CHART for the Lindberg atmosphere generator. With this flow arrangement it is possible to vary the gas composition over very wide ranges.

Generating Protective Atmospheres

A synthetic zeolite has been developed that selectively absorbs carbon dioxide and water vapor. This material makes possible completely dry gas generating and purifying.

A protective atmosphere generator which uses the new material has been designed by Lindberg Engineering Co. Atmospheres from pure nitrogen (99.99% N) to highly reducing (13% H_2, 11% CO) can be prepared with the new unit. With active zeolite, dew points below −80°F (−62°C) can be maintained. Table I shows the range of gas compositions that can be produced.

The flow diagram shows how the generator works. Once set, the generator is set for the desired gas quality, operation is fully automatic. There are no difficult analyses to be made, nor are any makeup materials necessary.

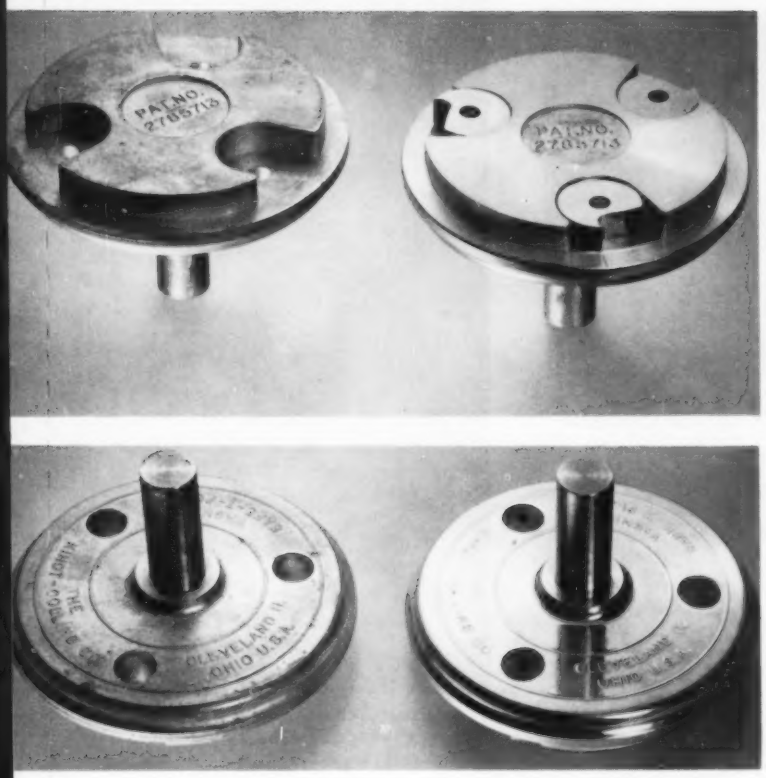
Regeneration of exhausted zeolite is quite easy and automatic. A motor operated timer controls the valves for the different absorbing towers so that there is no interruption of flow or purity of the atmosphere. Regeneration is also automatic.

The cost of producing gas with this generator will vary with the cost and type of hydrocarbon gas burned. In most locations where natural gas is used pure nitrogen can be generated between 13¢ and 18¢ per thousand cubic feet.

TABLE I

Analysis Range of Gas From HYNI Generator

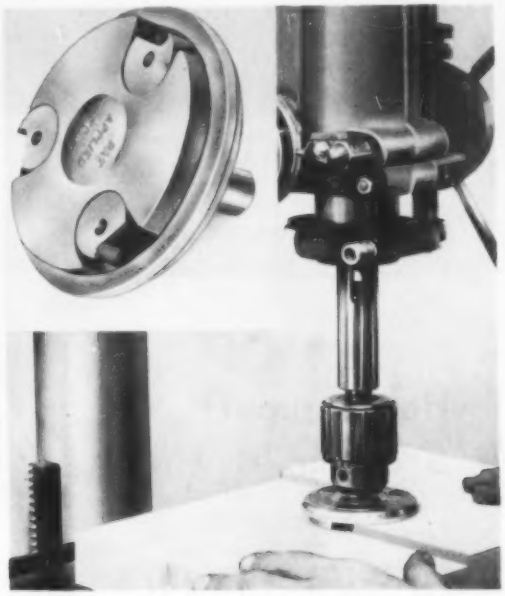
	From Inert	To Reducing
Oxygen	0.00%	0.00%
Carbon Dioxide	0.01	0.01
Hydrocarbons	0.00	0.50
Water Vapor	Less than −80°F Dewpoint	
Hydrogen	0.00	13.00
Carbon Monoxide	0.00	11.00
Sulfur	0.00	0.00
Nitrogen oxides	0.00	0.00
Nitrogen plus argon	balance	balance



HOW TO USE DIE CASTINGS

1. A WELL DESIGNED aluminum casting will take the severe stresses set up when a heavy cut is made.

2. AT HIGH SPEEDS balance must be good. A die cast head is accurate enough.



If your design is right . . .

Die Castings Will Take High Stresses

A LOT of designers think that die castings can't be used if they are severely stressed. But if a die casting is properly designed, it can be used safely under high loads. The experience of Gilmore Pattern Works and the Kindt-Collins Co. with their Safe-T-Planer proves it.

This planer is a wood working tool designed to be used in a drill press having a ½" capacity chuck. It will do rough stock removal, as much as ¼" per cut, and finish surfacing. Normal operating speed is 5000 rpm or lower.

Three hardened-steel cutters are mounted in a high strength aluminum die casting (figure 2). The drive shaft is cast-in and must take the entire load of the planing operation. When a heavy cut is taken, especially in hard wood, exceedingly high shear stresses are set up between the casting and the shaft. The casting must be strong enough to withstand them. Also, at each cutter blade both compressive stresses and shear stresses are found. Balance is critical. The rough trimmed casting is chucked by the drive spindle; a facing cut and a shouldering cut taken. It is only necessary to remove enough metal to meet finished dimensions, balance is then good enough. This demonstrates the accuracy of the die casting process.

Figure 1 shows before-and after-machining views of the top and bottom of the planer. The cored holes for the set screws which hold the cutters in place are cast with sufficient accuracy so that no boring or reaming is required. Final finish is in a barrel to give a smooth, bright surface.

Gilmore Pattern Works believes that no other method of manufacture could possibly compete with die casting for this part. A sand casting would be inaccurate and require more machining. Also, inclusions or blow holes might set up stress concentrations in the body, lead to failure and possibly seriously injure the operator. To make the tool from bar stock would be impossibly expensive and there would be no assurance of a slip-free connection between the head and the drive shaft. Also, desired lettering couldn't be included.

COPE AND DRAG HALVES of each mold are made at the same time. This shell has been cut in half, the two mating pieces will be cemented together.

METAL IS MELTED in Ajax Electrothermic furnaces. Pouring follows normal foundry practices.

SHELL MOLD CASTINGS

Here's proof!
5 examples where . . .

Design Change + Shell Mold Casting = Savings

A successful formula: A design change plus shell mold casting equals a better product for less money.

Here are five examples to prove our point. Each part used to be made some other way. The makers redesigned the parts, had them shell mold cast, and saved money. They saved from 40¢ to $4.00 a casting for the five parts we've shown. On a production run the savings add up.

Precision Manufacturing Co. made our five examples. The company specializes in close-tolerance castings for high pressure valves, oil tools, electronic equipment, etc. They can make castings in brass, bronze, aluminum, iron, and carbon and stainless steels.

Metal is melted in high-frequency Ajax-Northrup induction furnaces. Maximum capacity per heat is 500 pounds. Non-ferrous melts are made in a lift coil furnace, in 200 pound batches from pre-alloyed ingot melting stock. The ferfous melts are made in a basic lined nose tilting furnace. A charge consists of new alloy plus gates and risers. The company makes their own patterns. Dry sand, containing about 5% resin, is discharged from the muller and is conveyed to the sand hopper on the Shell Process molding machine.

The cope and drag halves of the mold are made at the same time. Cores, when required, are blown on a Shalco blower. After molding, the cope and drag halves of the shell pattern are sealed together with adhesive. Pressure, but no heat, is required. The completed mold is then bedded in sand for pouring.

After shake out, the castings are cut off and cleaned. The gates and risers are shot blasted and sorted by composition before remelting. Metal quality is controlled closely throughout the entire process, by quantitative chemical analyses and metallographic examination.

Should extra finishing be required, the castings are routed through the production machine shop. Otherwise they are sent to final inspection and shipping.

Advantages of Shell Mold Casting:

1. Greater accuracy.
2. Slip, a fault of sand castings, is absent.
3. Cores and mold components are rigid; therefore you can cast more complex parts.
4. You can core smaller holes than in sand.
5. Thin wall sections.
6. Less skilled labor is needed. Once the pattern is made, no skilled labor is essential on the molding floor. Your labor charges per mold is lower.

HYDRAULIC PUMP PART

This part, now shell mold cast, formerly was sand cast. Original tolerances on the sand casting left a 0.100" stock for finishing on the cam contour. Two expensive milling operations were needed before the faces could be ground.

As shell mold cast, in Cr-Mo-Ni alloy iron, only 0.025" stock is left on the cam contour. A simple broaching operation replaces milling. Also, the amount of stock left on the faces was minimized, cutting down on grinding time.

Estimated Savings: $1.20 per piece.

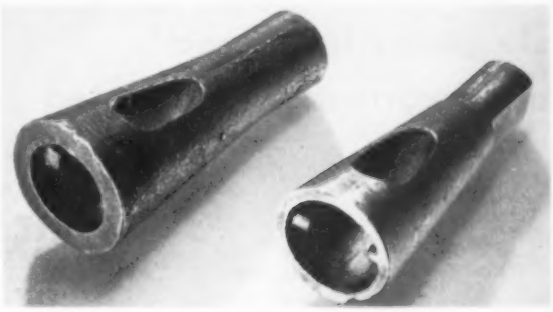
TAPER PLUG FOR AIR VALVE

Sand Cast, the plug weighed .53 lb. These machining operations were needed:

1. Taper turning on O.D.
2. Straight turning on stem.
3. Straddle milling on stem for flats on handle.
4. Final grinding of taper.

Now, shell mold cast in 3% nickel bronze, the plug weighs .31 lb. or 37.5% less. Turning and milling have been eliminated. Only 0.010" of stock has to be ground.

Estimated Savings: $1.50 per piece.



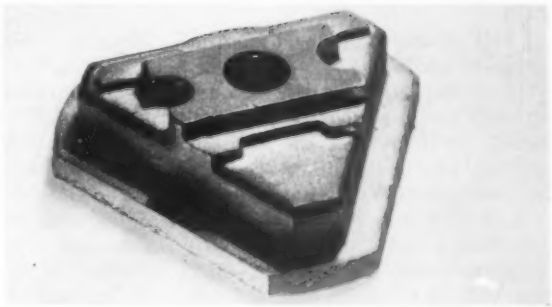
METERING PUMP PART

As a sand casting the part required two pencil milling operations on the contour, and a blind hole had to be drilled.

Now, shell mold cast in alloy 85-5-5-5, all milling has been eliminated. The small amount of stock on the contour is removed by a shaving die.

The blind hole is accurately molded in the casting.

Estimated Savings: $2.50 per piece.



VISIGAGE FLANGE

This flange, as a sand casting, had to be faced on the back on a lathe, a center hole bored to size, and the four corner holes drilled and counter-bored.

Shell mold cast in grey iron, the flange is used as cast. Estimated savings: $0.40 on each piece. More important, the machines formerly required for machining the part were released for other use.

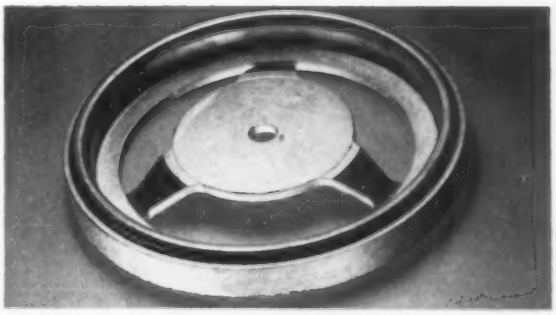
WHEEL FOR CYCLE TIMER

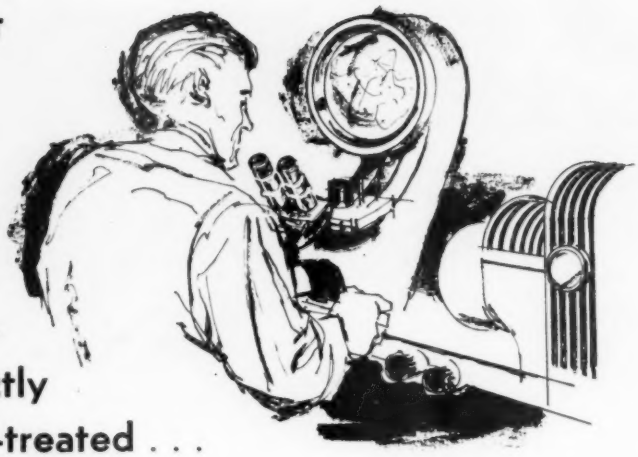
This wheel used to be machined from bar stock. The only reason was that sand castings were not accurate enough.

Cast in aluminum, the shell molded part, requires only milling of the timing slots in the rim. The shell mold casting costs less per piece than the bar stock raw material formerly used.

The estimated saving: $4.00 on each piece.

As for rejects, they are held to an unbelievable, pleasing minimum.





Here are the microstructures for correctly and incorrectly heat-treated . . .

H-12 Hot Work Tool Steel

By R. F. HARVEY*

THE 5% chromium hot-work tool steels, of which H-12 is an example, are an important group of tool steels. They are used for dies and molds for extrusion, die casting, forging, plastic molding and other high temperature applications.

To a large extent, the success or failure of a tool depends on proper heat-treatment. The micro structure will, of course, reveal whether the steel has been properly heat-treated.

This series of photomicrographs illustrate typical structures encountered in the annealed and heat-treated condition for H-12 hot work tool steel. The heat-treated structures and those illustrating surface condition have been tempered after hardening while those illustrating grain size are untempered. Two annealed structures are also included. In every case, Nital was the etchant.

The most desirable structures are indicated. The others, with the exception of the nitrided surface condition, are generally regarded as undesirable.

The recommended heat-treatment for this steel for use as an aluminum extrusion die is:

Preheat at 1200°F
Harden at 1825 to 1850°F — air cool
Double temper at 1080°F

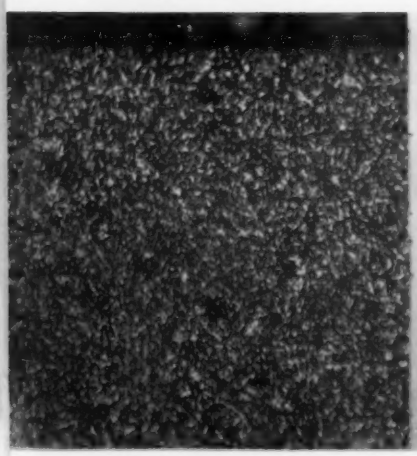
This heat-treatment will give a Rockwell C hardness of 48 to 50. The desired structure is shown after this heat treatment.

A duplex or mixed grain size may be encountered on large sections when hardened at excessively high temperatures or for too long. *continued on page 70*

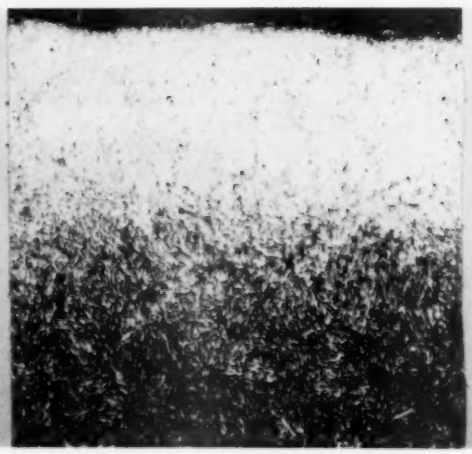
*RESEARCH METALLURGIST
BRAEBURN ALLOY STEEL CORP.

SURFACE CONDITION 200X

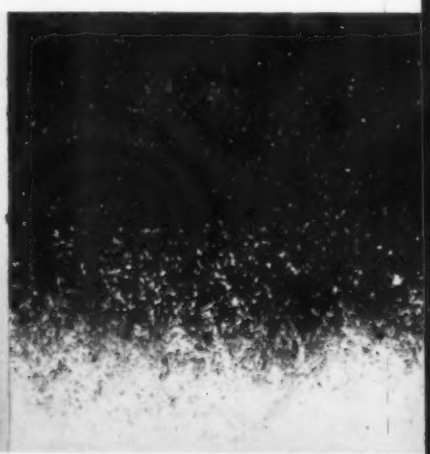
DESIRED



DECARBURIZED

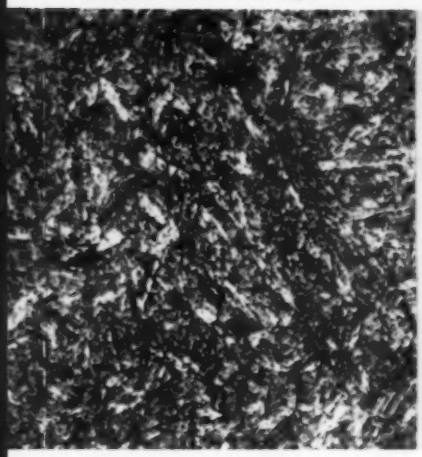


CARBURIZED

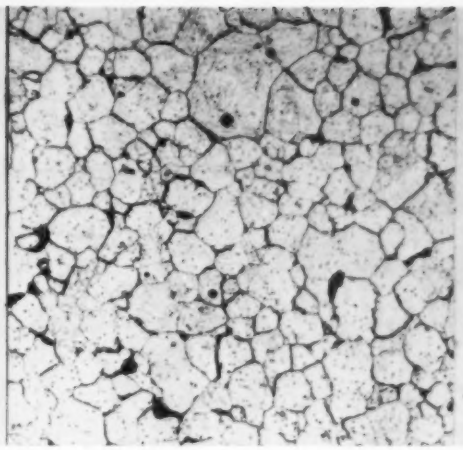


HEAT TREATED STRUCTURES 1000X

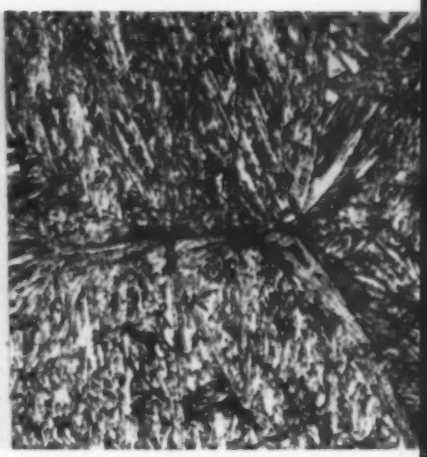
DESIRED



OVERHEATED

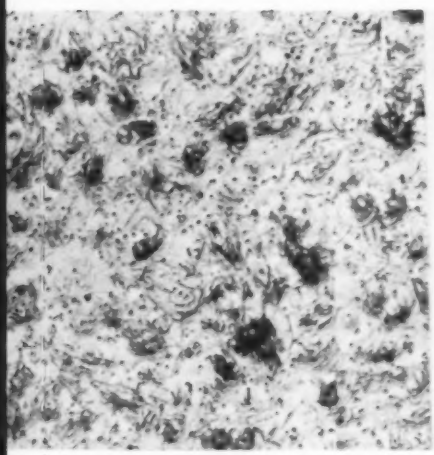


UNDERTEMPERED



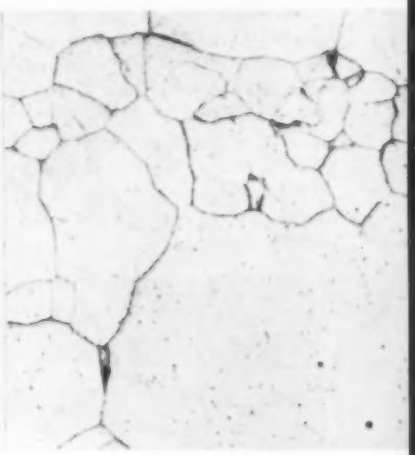
INTERCEPT GRAIN SIZE 500X

DESIRED



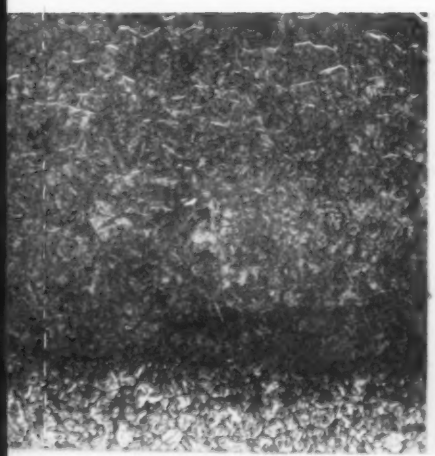
COARSE

DUPLEX

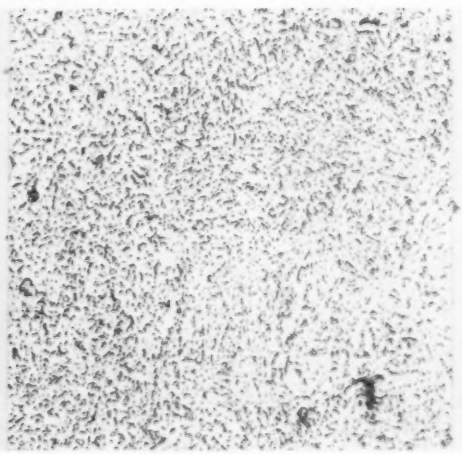


ANNEALED 500X

NITRIDED



DESIRED



UNDESIRABLE

Cut Assembly Costs With Extruded Sections

BY MICHAEL ISSEL*

YOU can make any shaped part by assembling a bunch of separate pieces. Sometimes there is no other way to make it. If that's what the designer needs, then you just pay for it. But more often a second look will show that a many component part can be formed as a single precision molded piece. The first cost may seem high, but if you compare the costs at finished level, you'll see the savings in a better light.

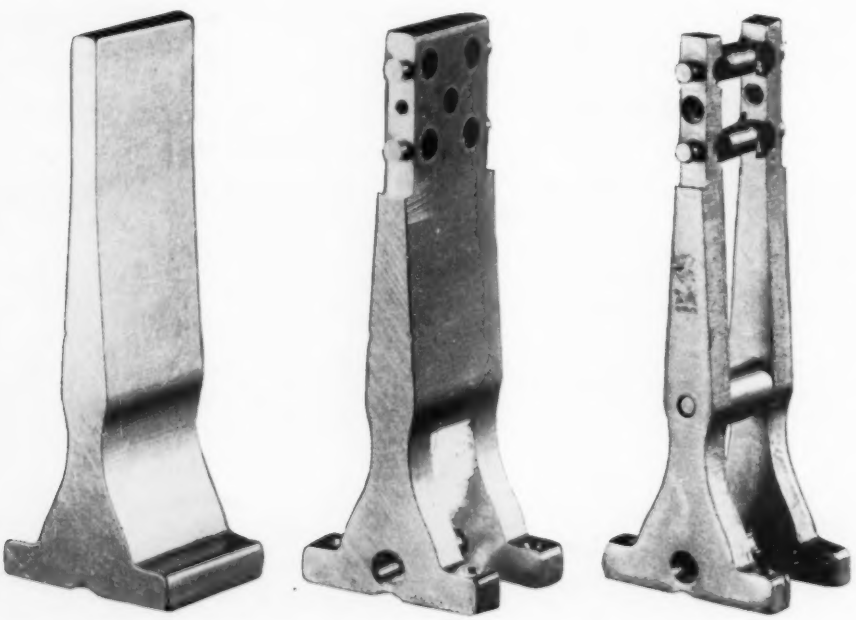
*SUPERINTENDENT OF TOOLS & MACHINES AUTOMATIC ELECTRIC CO.

That's just what Automatic Electric Co., Northlake, Illinois, a major supplier of equipment to the Independent (non-Bell) telephone industry, did on their switchboard lever-key-frame. This part, which is now an aluminum extrusion, used to be an assembly of two 3/16"-thick stampings and three steel screw machine parts. The five components were assembled and staked together in a press. Then the assembly was furnace brazed, and usually it came out warped. It was straightened by hand, and then it was finally machined.

Now an aluminum extrusion of just the right shape is used. Pieces are cut to length and a slot ⅜" by 1" is milled. The cutting and milling are done at the same time.

Not all other machine operations are eliminated. It's still necessary to drill seven small holes, tap four of them, and hollow mill four dowel pins. But all of these operations are simple and cheap.

Now, thanks to the extrusion process, the company has a better part at a lower final cost.

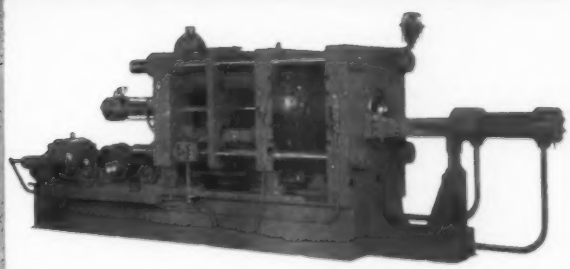


BY CHANGING FROM AN ASSEMBLY of stamped and machined parts to an easily machined extrusion the manufacturing costs of this part were cut. (Left) The extruded blank, (center) the machined extrusion, and (right) the original assembly of brass parts.

Built to augment production for a subsidiary of one of the big three automobile manufacturers by providing a faster, better means of trimming large castings. This press has tie bar centers of 40" front to back, 52" left to right, 4" tie bars, with a clear die area of 36" x 48" and a 30" stroke. Approach speed is 2000 IPM; return speed, 1000 IPM; power, 30 HP. . . . a very fast and efficient machine. For complete details of this or our smaller die casting trim presses of this type, write or phone.

36" x 48" AIR-HYDRAULIC DIE CASTINGS TRIM PRESS

B & T DIE CASTING MACHINES incorporate many structural superiorities which assure higher output of castings of high uniform density and finest finish . . . at minimum labor and maintenance costs. Made in cold chamber and gooseneck types in capacities of 125, 200, 300, 400, 500, 600, 750 and 800 tons. Write or phone for details.



You are cordially invited to use our independent RESEARCH CENTER for the furtherance of DIE CASTING technique. See what variable shot control and special hydraulic circuits will do to produce superior castings at higher rates of production.

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For more information circle No. 16 on the Reader Service Card

Joining Aluminum

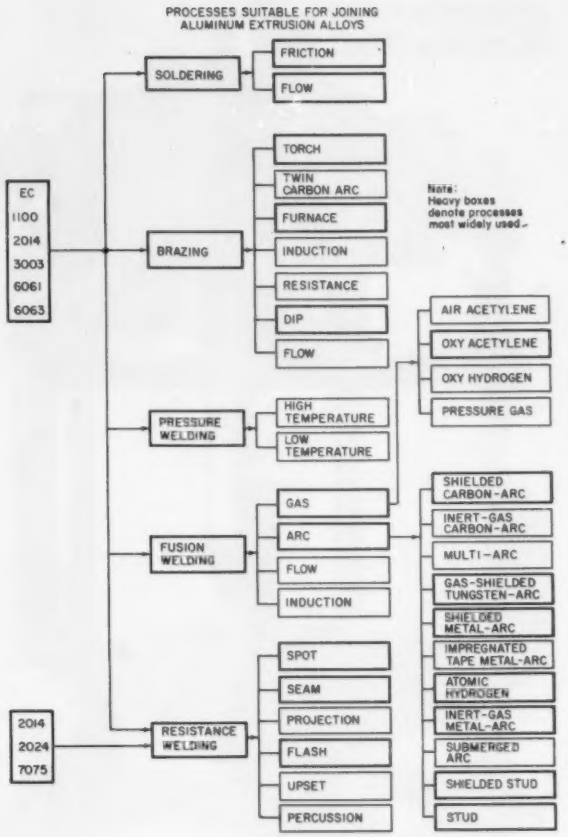


TABLE I

ALUMINUM can be soldered, brazed and welded as easily as any other metal. The methods are somewhat different, but it's being done in mass production on high speed automatic lines.

About 34 different methods of fusion joining are in use, and of these sixteen are in very common use. There are three things to remember about joining aluminum:

1. The great affinity of aluminum for oxygen
2. The high thermal conductivity of aluminum
3. The total absence of color change during heating. Let's talk about each one of these points in a bit of detail.

AFFINITY FOR OXYGEN

Very few, if any, people have ever seen aluminum. The metal with which we are all familiar is aluminum covered with a thin layer of oxide. This oxide layer is quite hard and very refractory. If it is scratched, the exposed metal surface is immediately covered with a new oxide film unless some other substance, such as flux, solder, etc. is available to coat the metal surface. The decomposition temperature, in air, is several thousand degrees Fahrenheit so that only an electric arc can get it hot enough. Also, the decomposition pressure is so low that at any temperature below the melting point it is uneconomical to reduce the oxide layer to metal.

In terms of metal joining this adds up to only one thing – a flux must be used to dissolve and replace the oxide layer when soldering, brazing and torch welding aluminum. With electric arc welding, particularly inert gas or shielded arc, the intense heat of the arc is generally sufficient to decompose the oxide layer. Coated rods are used when shielded arc equipment is not available.

HIGH THERMAL CONDUCTIVITY

The very high thermal conductivity of aluminum (see Table V) requires that far more heat be put into a piece of aluminum to raise it to soldering or brazing temperature than is required for steel. This accounts for the inability to solder with an iron, a torch must be used. Further, in brazing and welding a much larger torch tip must be used.

The high conductivity is the reason why soldering, brazing and welding should be done as rapidly as possible. The high speed cuts down the amount of heat that is conducted into the surrounding area and helps to reduce warping and distortion.

Another item, use point support when ever possible. A large flat support area aids in draining heat off rapidly. This increases the amount of heat that must be put into the joint to complete it.

HEAT COLORS

Iron and steel temperatures can be judged with fair accuracy by the color of the metal. Aluminum does not show any color change until well above the melting point.

WELDABILITY RATINGS

A — Weldable by all commercial methods.
B — Weldable by special techniques, preliminary trials recommended.
C — Limited weldability, may be crack sensitive, or lose corrosion resistance.
D — No commonly used methods have been developed.
X — Soldering not recommended.

WELDABILITY RATINGS FOR ALUMINUM CASTING ALLOYS

Alloy	RELATIVE WELDABILITY RATING(1)					
	Gas Welding	Arc Welding	Resistance Spot and Seam Welding	Brazing	Soldering	
					Flow	Friction
PERMANENT-MOLD CASTING ALLOYS						
43	A	A	A	B	B	A
A103	A	A	A	X	D	A
B113	B	A	B	X	D	A
C113	B	A	B	X	D	A
122	D	C	B	X	X	A
A132	D	C	C	X	D	A
138	D	C	C	X	X	A
142	C	B	B	X	D	A
B195	C	B	B	X	D	A
A214	B	A	B	X	B	A
355	A	A	A	X	C	A
356	A	A	A	X	B	A
DIE-CASTING ALLOYS						
13	D	D	D	X	C	A
43	B	B	C	A	D	A
85	D	D	D	X	D	A
218	D	D	D	X	B	A
360	D	D	D	X	B	A
380	D	D	D	X	D	A

TABLE II

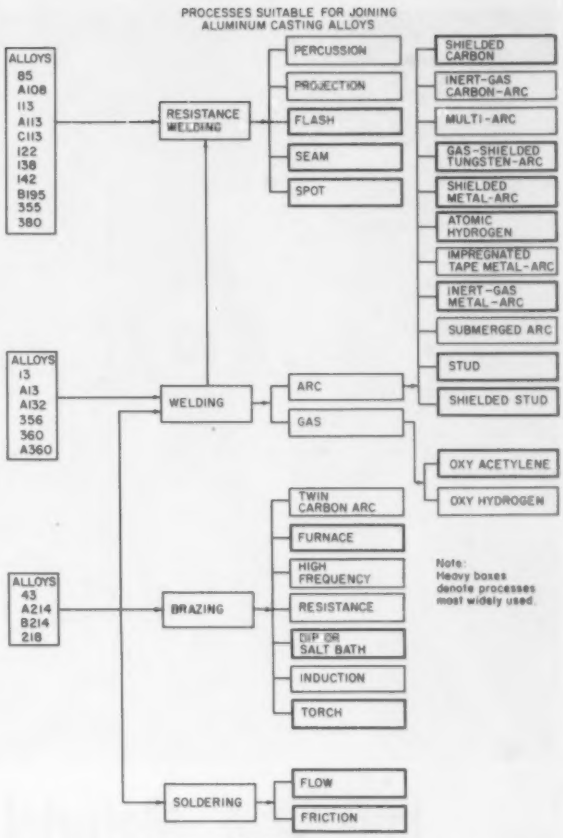


TABLE III

Obviously no temperature judgement can be made based on color.

Visual methods to judge the temperature of a joint for brazing, soldering or torch welding are used.

For low to moderate temperatures there are crayons which melt at specified temperatures. With the proper crayon the metal temperature can be judged closely enough for soldering and brazing. Some of the paste and liquid fluxes first dry out and when the proper soldering or brazing temperature is reached remelt. Other fluxes are designed to fume or smoke at the proper temperature.

In torch welding, a skilled operator can judge when a thin surface layer is molten. The right welding temperature is when the surface looks wet or shiny.

With electric welding there is no problem of temperature control. The weld is completed so fast that adjoining areas do not get hot enough to melt.

WELDING METHODS AND WELDABILITY RATINGS

While almost every method of soldering, brazing and welding can be used on aluminum there are a few preferred methods. Tables I and III give the preferred methods for aluminum extrusion alloys and aluminum casting alloys. Other methods can be used, but for the best results use only the methods rated as most widely used (heavy boxes).

TABLE IV

WELDABILITY RATINGS FOR EXTRUDED ALUMINUM ALLOYS(1)

Alloys (2)	Resistance Welding	Pressure Welding	Gas Welding	Arc Welding With Flux	Arc Welding-Inert Gas	Brazing	Soldering
EC	B	A	A	A	A	A	A
1100	C	A	A	A	A	A	A
2014	D	—	D	B	C	D	X
2024	D	C	D	B	C	D	X
3003	C	A	A	A	A	A	A
6061	A	C	A	A	A	A	A
6063	A	C	A	A	A	A	B
7075	B	D	D	D	C	D	D

Weldability ratings are somewhat arbitrary. Those given in Tables II and IV are based on the most reliable data that is available. The operator who follows these recommendations will be safe.

(Material furnished by Reynolds Metal Co.)

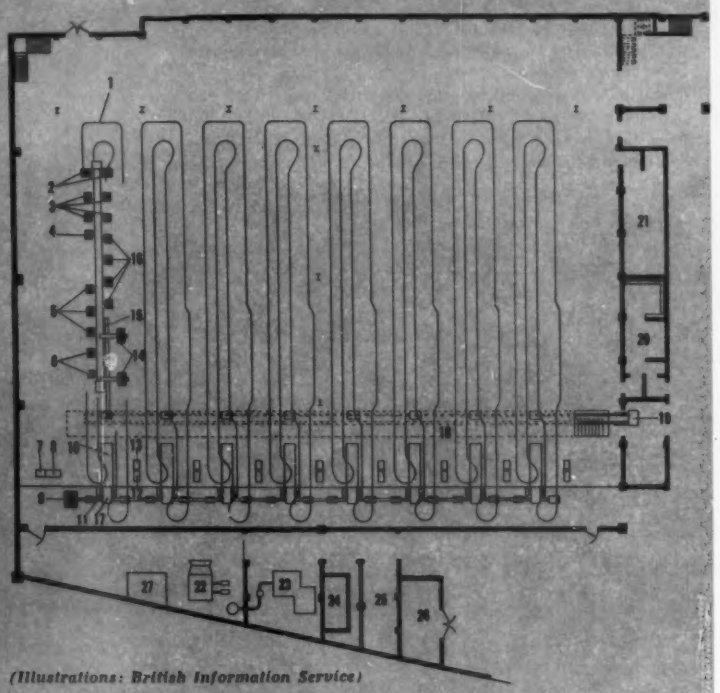
TABLE V

Relative Thermal Conductivity of Commercially Pure Metals

(copper = 100)

Silver	108
Copper	100
Gold	76
Aluminum	56
Magnesium	41
Zinc	29
Cadmium	24
Platinum	18
Cobalt	17
Iron	17
Steel	13-17
Tin	17
Nickel	15
Lead	9
Antimony	5

DIE LINE FOUNDRY layout is diagrammed at right. Key numbers are: 1. Flowmaster indexing conveyor; 2. Inspection; 3. back stand machines; 4. Dust extractor; 5. Drills; 6. Special Tools; 7. Launder control; 8. 60 kw melting furnace control; 9. 60 kw melting furnace; 10. Schultz die casting machine; 11. Launder; 12. 20 kw holding furnace control; 13. Die casting machine control; 14. Hydraulic presses; 15. Auxiliary scrap conveyor; 16. Tapping machines; 17. 20 kw holding furnace; 18. Subway; 19. Main scrap conveyor; 20, 21. Lavatories; 22. Coolers; 23. Compressor house; 24. fuel oil store; 25. Space heating boiler; 26. Sub-station; 27. Water softening plant.



(Illustrations: British Information Service)

Improved Material Handling Methods

by STEPHAN E. SCHATTMAN*

THE new zinc die casting foundry of the Wolverhampton, England, Die Casting Co., Ltd., is the most advanced in Europe today.

It offset rising costs by greater efficiency, mainly by recognizing that the best way to save was by reducing, or better still, abolishing manual handling. Also, reduced handling lowered the risk of damaging the surface of the castings.

Wolverhampton employs about 2200 workers in four plants with a total floor area of nearly 400,000 square feet. The average weekly output is 3,000,000 castings; 3000 different parts may be on the casting floor at one time.

The "old" zinc foundries use manually operated Schultz die casting machines. They are fed molten metal manually by ladling. The castings are loaded into stillages (pallet boxes), trucked to the finishing departments for up to 10 finishing operations. Each operation requires removing from and replacing in the stillage for movement to the next machining station.

Quite apart from the high cost, rejects are generated due simply to handling, in addition to those from the casting operation. Steps had to be taken to reduce rejects from both sources and to lower handling costs.

Studies showed that one operator could produce almost 100% good castings and another would have from 5% to 10% scrap from the same die. The difference was due mostly to the number of shots per hour. This effected temperatures and other operating conditions. An automatically controlled casting cycle could eliminate this fault.

On the finishing line most of the damage to the castings was due to poor handling; a condition difficult to control. In many cases the damage did not show up until the casting was polished.

NEW PLANT DESIGN

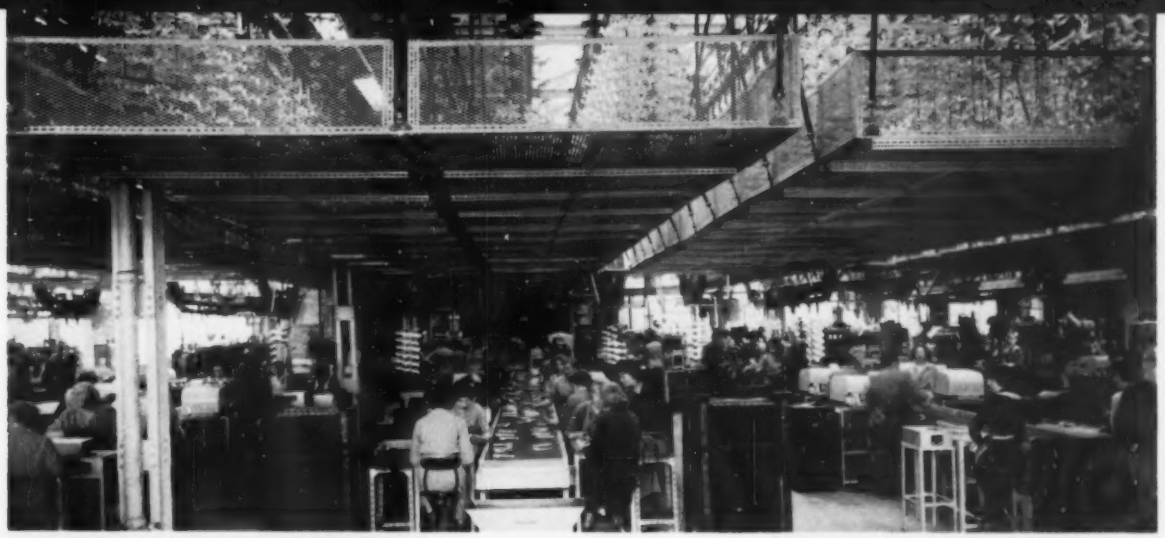
The new plant design was based on automatic casting cycles and a system to eliminate handling between trimming and machining operations. The casting machines were to run 24 hours per day, but the trimming and finishing lines only during the day. A method had to be provided to store castings made at night and to feed them to the finishing lines during the day.

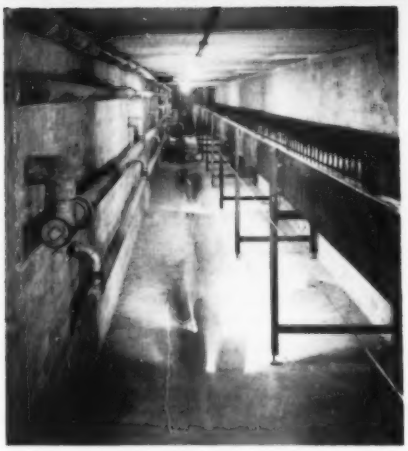
Finally, the large range of castings and the fairly small runs (small, at any rate, compared with runs in the United States) made it imperative to have trimming and finishing lines that could adapt to the greatest range of castings.

NEW FURNACES

The company rejected the idea of one main melting furnace from which a monorail would carry the molten metal in a ladle to the holding pots. Instead, it adopted the Birlec-Tama system of feeding; the

*ECONOMIC LECTURER, JOURNALIST AND BROADCASTER



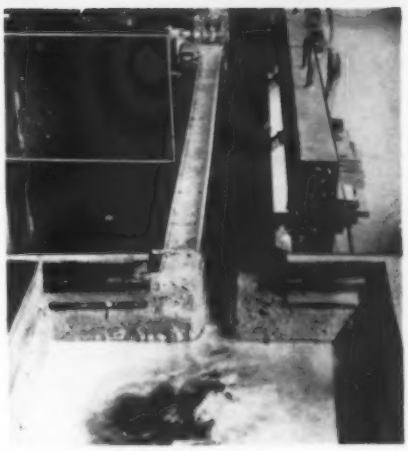


GENERAL VIEW shows overhead storage, trimming lines, and in background are die casting machines (#10).

SUBWAY (#18) has main scrap conveyor (#19) inside. It runs under trimming lines.

MOLTEN METAL flows from melting furnace (#9) to the machine (#17) through launders (#11).

(#) Numbers refer to floor plan.



first die casting plant in Europe to use it.

Two 60 kilowatt Birlec-Tama low frequency induction furnaces with capacities of 1680 to 1736 pounds and melting rates of 1232 to 1344 pounds of Mazak III (Zamac 3) per hour were installed. One break-down furnace is at each end of the line of eight die casting machines in the plant.

Each machine has an induction heated holding furnace rated at 20 kilowatts with a capacity of 2912 to 3024 pounds. A system of resistance heated launders connects the main melting furnaces with the holding pots.

The resistance heaters are able to remelt metal in the event of a stoppage. Only one man per shift is required to maintain a supply of molten metal instead of the three per shift that were needed before modernization. Metal losses during melting are as low as 0.3% to 0.4%.

Eight die casting machines, each with a trim and machining line are spaced at 15 foot intervals. Seven of these complete units are in regular operation with about 120 women operators on the finishing lines. The eighth complete unit is for stand-by and set-up of new jobs.

CASTING CONVEYOR SYSTEM

The conveyor linking the die casting machines with the trimming lines is the most important part of the system. It is a "Flowmaster" indexing conveyor, made by Fisher and Ludlow, Ltd. An individual conveyor of about 389 feet, arranged in several loops above the trim lines, serves each machine.

Storage capacity is 2040 sprays of 12 castings, each of which may represent more than one component. Steel rods with a number of staggered branches, trees, carry the castings so that they cannot touch each other.

Once a machine operator has loaded a tree, it is carried into storage above the floor and an empty one takes its place.

Carriers may be sent either to over head storage or directly to the trim lines depending on the load.

TRIM LINE OPERATION

The first operator on the trim line can obtain castings from either overhead storage or directly from the casting machine. The Flowmaster conveyor carries castings to the trim press only.

Trimming is done on hydraulic presses, one per line. After trimming the castings are put on a belt conveyor which feeds all of the secondary machining operations. These include drilling, tapping, abrasive belt cleaning, etc. They are arranged on both sides of the belt.

All machining units are readily moved and any line can be rapidly rearranged. At the end of the belt conveyor the parts are packed for shipment to the customer or to the platers.

continued on page 56

MATERIAL HANDLING

continued from page 55

SCRAP HANDLING

Sprues and other metal scrap are dropped down a short conveyor onto the main metal reclaiming conveyor, which runs the entire width of the plant in a subway six feet wide by seven feet high. Water, compressed air, drain lines and other services are also carried in it.

The slat type conveyor, used so widely in the United States, was prone to jam. Wire mesh belt wore quickly and was easily distorted. Eventually, Fisher and Ludlow, Ltd. made a 137 foot long belt conveyor, elevated from the floor at one end.

This conveyor discharges the scrap metal close to the remelt furnace. Ultimately the scrap metal will be discharged directly into the furnace, an additional saving of labor.

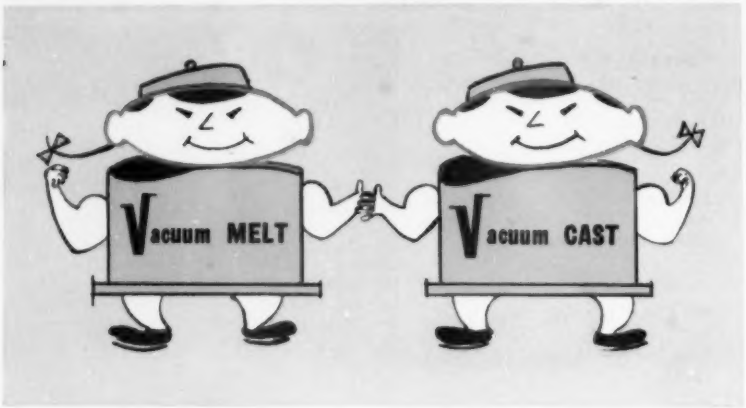
SPEED OF PRODUCTION

Perhaps the most outstanding result of the new materials handling system is that it cut a seven to ten day production cycle down to 24 hours. If real speed it vital, the cycle may go as low as 12 hours.

The rate of flow of castings is 500 to 600 per hour. Even at this high rate, production of each part is under complete control.

There are practically no labor costs for transport of castings between different operations. Valuable floor space is no longer taken up for storage.

Direct labor per ton of castings produced has been reduced from six workers per ton to four. The new plant will produce 2000 tons of castings per year from a floor area of only 18,000 square feet, a 50% increase over the old plant. Rejects due to improper handling and variable cycling have been virtually eliminated.



MISCO INTRODUCES "DOUBLE V"

A technique to enhance the properties of metals demanded by the aircraft, missile and space age vehicles.

"DOUBLE V" signifies the manufacture of cast components using *vacuum melted primary* ingots subsequently *remelted, poured in vacuum,* using investment or MONO-SHELL molds.

Misco engineers have designed vacuum equipment which permits continuous operation for High Volume Production. Charging of primary ingots, introduction of MONO-SHELL molds, melting and pouring, are carried out in vacuum through the ingenious use of charging locks.

For maximum benefits, melting temperatures are controlled optically and a vacuum pressure of 10 microns or less is maintained on mold and metal during pouring.

ORDER BY REQUESTING "DOUBLE-V"

V-PRIMARY V-CAST MISCO

Misco now provides a complete range of casting facilities to meet your requirements — AIR — INERT ATMOSPHERE — VACUUM, for your airfoil shapes now and in your future. *Send us your inquiries and details of your requirements.*

Misco Precision Casting Company

Plants in WHITEHALL, MICHIGAN MUSKEGON, MICHIGAN

MISCO

Address inquiries to 122 Gibbs St. WHITEHALL, MICHIGAN Whitehall 2-1515

Sales Offices in Principal Cities

PRODUCERS OF AIRCRAFT AND INDUSTRIAL INVESTMENT CASTINGS

For more information circle No. 71 on the Reader Service Card

NEW ENGINEERING REPRESENTATIVES FOR BUNTING BRASS

THE BUNTING BRASS AND BRONZE CO. has announced the appointment of four new sales engineers. Robert F. Hawkins will serve the southwest territory; George S. Mountford, northern Ohio; Joseph T. Weber, Wisconsin and Minnesota; and James N. Guthrie in the Philadelphia office.

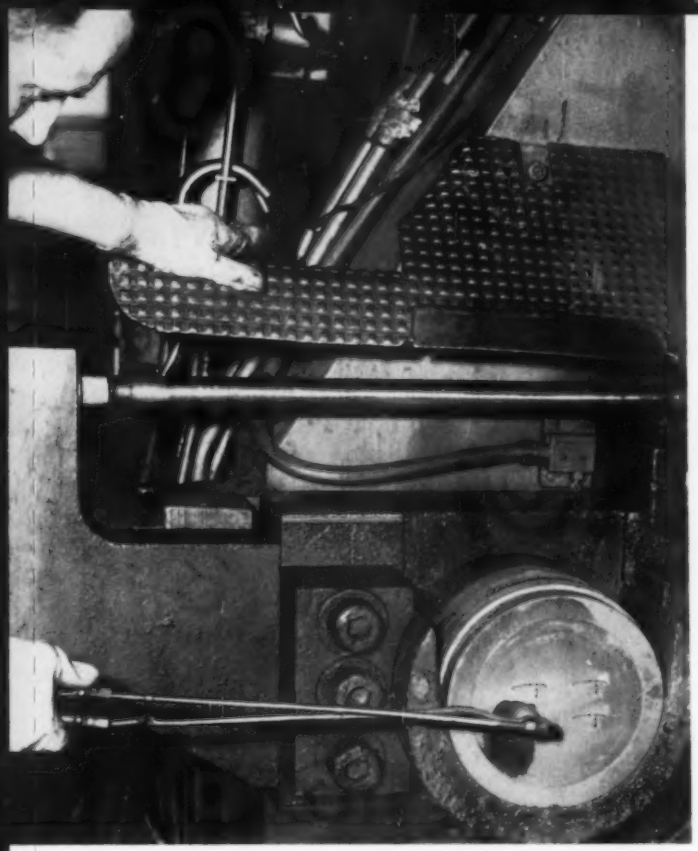
NEW RESEARCH CENTER TO BE BUILT IN COLUMBUS, O.

Construction has begun on a new $2 million research center in Columbus, Ohio. The new facility is being built by AMERICAN BRAKE SHOE CO. and will be operated by its DENISON ENGINEERING DIV. It will be known as the Hydrodynamics Research Center of American Brake Shoe Co.

The primary aims of the new facility, in addition to expanding current research activities, will be advanced work in the fields of hydraulics, electronics and pneumatics.

CRUCIBLE STEEL HAS NEW SPECIFICATIONS MANAGER

To direct the specification activities in all products and to provide technical information about sales and promotion of new and established products; CRUCIBLE STEEL CO. OF AMERICA has appointed Robert T. Merelli as supervisor of specifications and technical information.



SPRAY IT ON, then push. There's no build-up of lubricant and die face friction is reduced.

More accurate extrusions with better surface finish and longer die life result from . . .

Improved Extrusion Lubricants

BY G. C. GILES*

ALL of the care and thought that has gone into the design of an extrusion and into the construction of an extrusion die can be lost if improper lubricants are used during the extrusion operation.

It's true that personal preference has a lot to do with picking lubricants, particularly lubricants for working hot metal. But there is a lot of reasoning too. Some things don't lend themselves to personal likes or dislikes. If the man who buys an extrusion lubricant will remember some of the things, he will save a lot of cutting and trying:

1. A good lubricant will not build up heavy deposits on the die.
2. A good lubricant will deposit a uniform, thin film that is stable at extrusion temperatures.
3. The vehicle should evaporate cleanly with little, or better yet, no smoke and fume.
4. Preferably you should be able to spray on the lubricant instead of swabbing it on.
5. No noxious or harmful vapor or smoke during use.
6. There should be no unwanted deposit on the die as a result of vehicle evaporation.
7. A sufficient film of lubricant must be deposited to last through an entire push.

Probably the most widely used lubricant for the extrusion of aluminum is graphite. It seems uniquely suited for it. This is probably due, in part at least, to its lamellar structure and its tendency to shear into thinner and thinner plates. Further, at the usual temperatures for extruding aluminum, graphite is stable.

The main things to consider then are the degree of sub-division of the graphite and the vehicle. Colloidal graphite suspended in water seems to be the best. It meets all the conditions. It can be sprayed on. It gives a uniform layer of graphite. Water evaporates without smoke, fumes and vapors. Almost all the graphite can be used up on each push, so there is no build up. The

*ASST. SALES MGR.
ACHESON COLLOIDS CO.

water evaporates cleanly and leaves no unwanted deposits.

The experience of Aluminum Extrusions, Inc. illustrates the advantages of a water dispersion of colloidal graphite (Aquadag) as an extrusion lubricant.

This company formerly used a commercial oil-graphite compound suspended in oil. The presses extrude light metals from 5-, 6-, or 7-inch billets preheated to between 800° F to 1000° F. The container temperature is held at 550° F, and the dies are preheated to the same temperature.

At this temperature the oil decomposed and flashed during burn-off. It left a carbon deposit that was harder than the graphite and worthless as a lubricant. It built up on the die, spoiling both dimensional tolerances and surface finish. In addition, siezure or check-marks, the major hazards of the extrusion operation, were common.

Water based colloidal graphite ended all of these troubles. The lubricant was applied uniformly with a spray gun (they used to put it on with a swab) and only the amount of lubricant in the places where it was desired was applied. The result was improved working conditions and a safer working area. Dies lasted longer and the metal flowed smoother. Siezure or check-marks are now rare. Now a more uniform quality and smoother surface finish are obtained.

Some dies had their life extended from 1000 strokes to an average of 3000 strokes. In a properly aligned press, the use of this type of lubricant is a material aid in holding tolerances to better than ±7% of the nominal wall thickness.

A further advantage is in the lower amount of lubricant needed. At Aluminum Extrusions, Inc. the older lubricant consisted of 16 pounds of commercial oil-graphite compound mixed with 55 gallons of oil. This mixture could not be kept in suspension so that spraying was not possible. With colloidal graphite in water only 11 pounds of graphite in 55 gallons of water are needed; a major cost reduction.

Another troublesome problem in large production operations is the separation of the dummy block from the butt end of the billet. Without a good parting material,

continued on page 73

HYDRAULIC SAFETY BULLETIN

PROTECT HYDRAULIC EQUIPMENT, REDUCE REPLACEMENT COSTS WITH IMPROVED UCON HYDROLUBES

Ucon hydrolube fire-resistant fluids have excellent corrosion- and wear-resistance

Wear and corrosion are responsible for a large slice of the replacement dollar spent on hydraulic equipment. Now, Ucon hydrolubes provide wear and corrosion resistance equal to petroleum oils *plus the additional protection of fire-resistance.*

HYDROLUBES PREVENT CORROSION

Ucon hydrolubes 150-CP and 275-CP provide improved corrosion protection in both liquid and vapor phases over previous hydrolube formulations. Ucon hydrolubes have no adverse effect on steel, cast iron, aluminum, brass, or copper under normal operating conditions. They successfully pass the standard ASTM test for rust-preventive characteristics (ASTM Designation D 665-54). The inhibitors incorporated in the hydrolube fluids not only essentially eliminate rust formation from the water present, but also aid in the reduction of wear.

WEAR-RESISTANCE TOPS

Actual plant installations in a wide variety of industrial hydraulic systems as well as a large number of controlled laboratory tests have shown that wear in vane-type pumps is significantly reduced with Ucon hydrolubes 150-CP and 275-CP in comparison to previous hydrolube formulations. These results have been confirmed in 750-hour—1000 psi standard rotary vane tests at 150°F. conducted by independent laboratories. These tests show that the wear-resistance of "CP" hydrolubes is in the same general range as petroleum hydraulic oils.

Test Results

	Inhibited Petroleum Hydraulic Oil	Ucon Hydrolube 150-CP	Ucon Hydrolube 275-CP
Viscosity at 100°F.,S.U.S.	216	158	276
Weight Loss 12 Vanes	34 mg.	17 mg.	30 mg.
Eccentric Ring	125 mg.	28 mg.	72 mg.
Total	**159 mg.**	**45 mg.**	**102 mg.**

HYDROLUBES ARE ECONOMICAL

Ucon hydrolubes are the economical answer to fire-resistance in hydraulic fluids. Most commercial hydraulic equipment can be easily converted to Ucon hydrolubes with a *minimum of time and expense.* And, Ucon hydrolubes have no harmful effects on neoprene or most other standard packing materials. Reduced leakage losses also have been frequently reported. Ucon hydrolubes are approved by Factory Mutual Laboratories.

Get all the facts on Ucon hydrolubes. Write for the booklet, "Ucon *Hydrolubes Spell Safety.*" Address . . . Department B.

UNION CARBIDE CHEMICALS COMPANY

DIVISION OF UNION CARBIDE CORPORATION

30 E. 42nd Street, New York 17, New York

The terms "Ucon" and "Union Carbide" are registered trade marks of UCC.

For more information circle No. 103 on the Reader Service Card

HOW TO USE
INVESTMENT CASTINGS

NEW TECHNIQUES make investment castings more economical than ever for industrial applications.

Low Cost Miniature Castings

SMALL parts that have to be produced in large quantities, to precise dimensions and at low cost can be a design headache as soon as the required mechanical properties exclude a die casting in either zinc or aluminum. The rivet gun jaw shown in the illustration is one of these parts. What are the requirements for this part?

First it had to be in 4140 steel or its equivalent because it takes a terrific beating in use.

Then it had to be made to close tolerances, some as close as a total variation of 0.003". The teeth are only 0.010" wide and 0.010" deep with a 32 pitch. The maximum section thickness is only 0.058". These are tough dimensions to meet and hold.

To make matters worse some 50,000 pieces per day are needed.

Naturally, designers investigated all sorts of manufacturing methods. These included both hot and cold forging, coining from blanks, screw machine manufacture and others. The final choice was investment casting by a relatively new process called "Minicast", a development of Casting Engineers, Inc.

In this process of manufacture, the part is first cast as a rather conventional investment casting. It is then coined to secure the dimensional accuracy and flatness that is required. Producing the jaws at the desired rate it is possible to make parts with the critical dimensions held to ±0.001" and with a surface smoothness between 30 and 50 microinches.

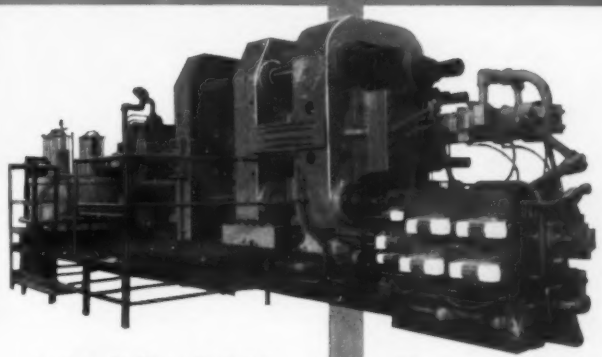
What's more, these parts are made for only 15¢ each. No other process can match these costs at the required accuracy.

HAMPDEN BRASS ADDS 2 NEW 1000 TON DIE CASTING MACHINES

. . . LARGEST OF THEIR TYPE IN NEW ENGLAND

Here's Why Hampden Brass Can Serve You Better!

In order to improve our facilities and serve our customers even better, we have added 2 new die casting machines of 1000 ton capacity . . . in addition to our standard 400 and 500 ton die casting machines. These new machines are the largest of their type in New England.

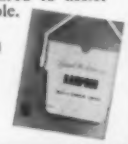


Look at All These Features:

- **INJECTION:** 25 lbs. of aluminum 60 lbs. of zinc
- **SPACE BETWEEN BARS:** 35" x 45"
- **CASTING CAPACITY:** Up to 900 square inches of aluminum

Whatever your die casting requirements . . . from a watch case to a car door, Hampden Brass is prepared to meet your specific needs . . . quickly, efficiently and to exacting specifications. Our sales engineers are always ready and prepared to assist you in any way possible.

Send for brochure, "Behind the Scenes" . . . complete digest of Hampden Brass's experience, equipment and facilities.



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Established 1903

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Non-Ferrous Castings: *Sand, Permanent Mold, Die and Structural Fiberglas*
Complete Pattern & X-ray Lab Facilities

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NEWS OF INDUSTRY & ASSOCIATIONS

activities of people, companies & groups in the precision metal molding industries

ALUMINUM EXTRUDERS COUNCIL

The Aluminum Extruders Council, trade organization of the independent aluminum extruders and suppliers to the extrusion industry, met in Washington, D. C. last month for their annual meeting. At this meeting, officers for the coming year were elected and new members admitted to the council.

WERNER

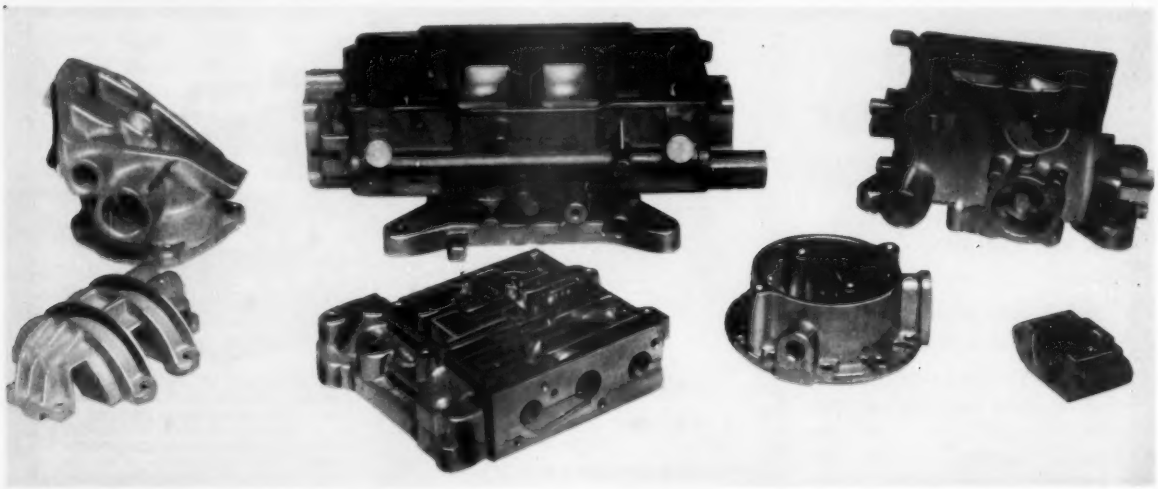
NEW OFFICERS

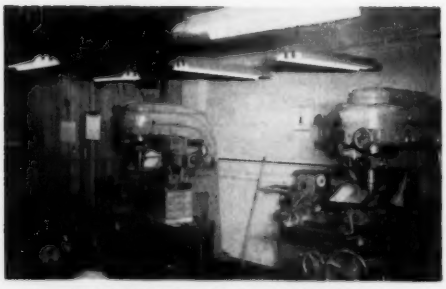
For the coming year the officers of the council will be: Leo L. Werner, R. D. Werner Co., president and chairman of the board; Harold Kapp, Air Master Corp., executive vice president; Paul Horsch, W. L. Bonnell Co., director; Leonard Starr, Michael Flynn Mfg. Co., director; Leon Friedman, National Aluminum Co., director. Aea vice presidents are: Oscar Cole, Jerex Corp., for New York; L. C. Laderer, Wells Aluminum Corp., for Chicago; M. A. Nadler, Aluminum Air Seal, for Youngstown, Ohio; Richard Pickens, Texas Aluminum Co., for Texas. Area vice presidents for Florida and the West Coast have not yet been elected. The executive secretary and treasurer will again be the Walter Gebhart Organization.

NEW MEMBERS

Companies elected as active members of the council are: F. A. Pilgrim Co., Youngstown, Ohio; Saramar Aluminum Co., Youngstown, Ohio; Texas Aluminum Co., Roskwall, Texas; R. D. Werner Co., Inc., Greenville, Pa.; Quality Aluminum Products Co., Detroit, Mich.; Wells Aluminum Corp. North Liberty, Ind.; Aluminum Air Seal Mfg. Co., Youngstown, Ohio; The B & T Metals Co., Columbus, Ohio; General Extrusions, Inc., Youngstown, Ohio; Kawneer Co., St. Charles, Ill.; and Precision Extrusions, Inc., Bensenville, Ill.

New associate members are: Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.; Apex Smelting Co., Chicago, Ill.; International Selling Corp., New York, N. Y.; and Olin Mathieson Aluminum Div.





MODERN DIE SHOP EQUIPMENT

Precision Cavities Our Specialty

Specialists in Die Cast Dies — Plastic Molds — Powder Metal Molds — Wax Molds for Investment casting.

The latest in toolroom equipment assures you of precision workmanship and prompt delivery. Design and build complete dies, or cavities to fit your die.

PETERS DIE SINKING, INC.

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DESIGNERS AND BUILDERS OF DIE CAST DIES DIE CAST TRIM DIES

(ZINC OR ALUMINUM)

TOOLS
JIGS
FIXTURES

The key to successful die casting is in the tooling. We have the facilities to construct the die cast die, the die cast trim die and all the necessary tooling for machining the casting.

Complete engineering services are available to assist you in die design for your problem casting.

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DALKROM T & D DETROIT

Circle No. 36 on the Reader Service Card

NEW MANAGER FOR INDUCTOTHERM IN CLEVELAND

SABOL

The new district office of INDUCTOTHERM CORP. will be headed by J. T. Sabol.

The new office will serve as sales, engineering and service headquarters for Ohio, Western Pennsylvania and part of West Virginia.

DU-CO CERAMICS APPOINTS DEPARTMENT HEADS

SHEEHAN

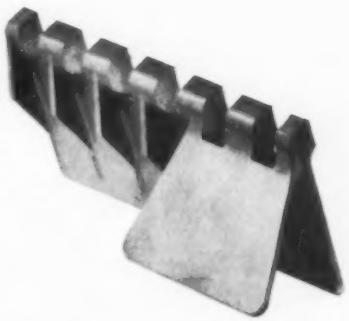
O'CONNER

Robert W. Sheehan has been made plant superintendent and Frank O'Conner chief of research, development and material control at DU-CO CERAMICS CO. The announcement of the appointments was made by John J. Duke, president of the company.

SAUNDERS CO. TO DISTRIBUTE CERAMIC MATERIAL

ALEXANDER SAUNDERS & CO. have taken over the eastern sales and distribution for Nalcast and Nalcoag, ceramic shell mold compounds manufactured by NATIONAL ALUMINATE CORP. Both products are used in conjunction with disposable patterns in a modified investment casting method that is reported to give smooth cast surfaces and good dimensional accuracy.

Rx



an INVESTMENT CASTING of course

because investment casting means easier, more consistent, more uniform parts with higher properties at lower cost.

made of Rx MET ALLOYS of course

because Rx MET alloys give better, more consistent results through precise metallurgical control.

smart designer
smart producer

because both specify investment casting alloys by:

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DETROIT 7, MICHIGAN

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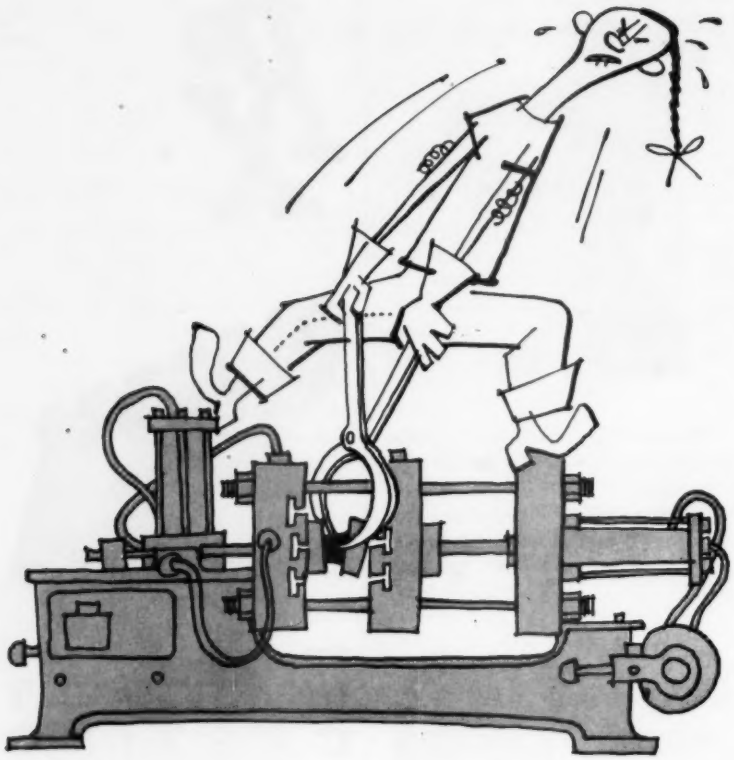

Don't have a tong war... use Die Slick!

There *is* something new under the die casting sun. It prevents sticking, scoring and soldering on aluminum die casting. Really remarkable is that you can thin brand new 44 Die Slick with WATER *or* kerosene *or* solvent *or* white oil *or* you name it. It sounds incredible, but it's in production use in dozens of big plants.

The people who thin it with water report excellent release properties without die checking. Furthermore, they report saving lots of money because they no longer need expensive thinners. 44 thins easily with 3, 4 or 5 parts water, and it won't settle out. There's no fire hazard, either.

The people who prefer to thin it with solvents say they get better release properties than with any other compound. Either way you use it (and we suggest you try both ways) you'll be pleased. Order a trial gallon today. If you don't like it, we'll pay the bill.

Die Slick is a registered trade mark of G. W. Smith & Sons, Inc.

DIE SLICK

used by die casters everywhere

G. W. SMITH & SONS, INC.,

1700 SPAULDING ROAD, DAYTON 3, OHIO

For more information circle No. 97 on the Reader Service Card

NEW JERSEY ZINC ESTABLISHES WEST COAST OFFICE

COLLBRAN

SHERIDAN

Announcement has been made by THE NEW JERSEY ZINC CO. of the establishment of a west coast office with headquarters in Los Angeles. The new office will be headed by John S. Collbran Jr. as pacific district sales manager; he was formerly western district sales manager located in Chicago. The Chicago office will now be headed by James P. Sheridan.

BELLOWS CO. ANNOUNCES ORGANIZATION CHANGES

H. B. Link, president of the BELLOWS CO., has announced a number of promotions and new assignments. W. C. Butcher was promoted to vice president-general manager of The Bellows Co. of California. L. A. Boese is now sales manager in California. Frank V. Stauffer moves from Detroit to Cleveland as district manager. F. L. Walters is now the Detroit district manager. J. G. McComb is assistant chief engineer of the Hydrair Corp., a Bellows engineering division. L. E. Neafie, Jr. moves to the Dayton area as field engineer and Will Rob is now field engineer for the Cincinnati area.

ARMY OFFICERS AND POWDER METALLURGISTS MEET

In a discussion to further expand the applications of sinterings to ordnance needs the Metal Powder Industries Federation and the Powder Metallurgy Parts Mfg. Association met with top army ordnance officers in a three day session at Frankford Arsenal.

The meetings included a display of parts produced by some 45 organizations in the powder metallurgy field and technical meetings

between MPI members and ordnance officers. Included in the discussions was a paper on the physical properties of slip cast steels and a panel discussion on iron powder.

NEW BERYLLIUM ROLLING MILL BEING BUILT

The rolling mill facilities of THE BRUSH BERYLLIUM CO. will be expanded by the construction of a new building to house cold strip mill facilities, additional machining capacity for both billets and slabs and expanded annealing facilities.

At present the company produces hot rolled beryllium sheet in sizes up to 30″ x 90″ and from 0.020″ to 0.090″ thick.

AINSWORTH-PRECISION HAS AUTOMOTIVE SALES SECTION

To spark its automotive sales, AINSWORTH-PRECISION CASTINGS CO. has appointed George M. Rice as automotive sales manager.

Mr. Rice has had many years experience in sales and advertising in addition to 17 years experience in purchasing for the Ford Motor Co.

UNIVERSAL-CYCLOPS NAMES NEW SALES REPRESENTATIVE

J. Harris Phillips has been appointed sales representative of UNIVERSAL-CYCLOPS STEEL CORP. Mr. Phillips will cover the Toledo area from the Cleveland district sales office.

CASTING SUPPLY HOUSE TO HANDLE NEW LINES

Robert Greenbaum of CASTING SUPPLY HOUSE has announced that his company has been appointed eastern sales representative for WaiMet Alloys Co., of Detroit and Yates Mfg. Co. of Chicago. Casting Supply House will handle the complete line of products of both of these companies.

NEW SALES MANAGER FOR KAISER ALUMINUM

KAISER ALUMINUM & CHEMICAL SALES, INC. has announced the appointment of Samuel P. Whiteside as sales manager for the northeastern regional sales. Mr. Whiteside succeeds R. E. Belknap who now heads the newly created division of eastern division manager of trade relations.

METAL SOCIETY ANNOUNCES 1958 AWARD RECIPIENTS

Three major awards presented annually by the American Society for Metals for service to and achievements in the science of metals and the election of an honorary member were announced this week by G. MacDonald Young, president of the society.

Receiving honors to be presented at the Society's annual meeting are: Dr. Albert J. Phillips, vice president and director of research, the American Smelting and Refining Company, South Plainfield, New Jersey, who will receive the Gold Medal of the Society; Crawford H. Greenewalt, president, the E. I. DuPont de Nemours & Company, Wilmington, Delaware, who is to receive the Medal for Advancement of Research; and William G. Pfann, physical metallurgist, the Bell Telephone Laboratories Inc., Murray Hill, New Jersey, the recipient of the Albert Sauveur Achievement Award.

Ernest E. Thum, editor-in-chief of the Society's journal, Metal Progress, was selected as an Honorary Member.

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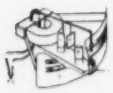

General characteristics: indicating *and* providing positive control; distinctively simple, convenient, reliable, economical; tubeless; plug-in meter units; thermocouple break protected; guaranteed; demonstrated and serviced from offices in many cities here and abroad.

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for Off-On control

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for Proportioning control; more precise where heating-cooling factors are more dynamic

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MODEL JE SERIES

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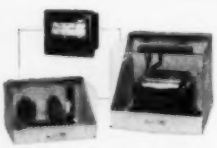

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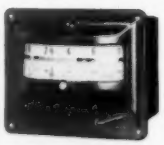

All controllers can be furnished for thermocouples or resistance bulbs. For data on these or other West instruments and accessories, use your classified phone directory or write direct.

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LETTERS

continued from page 13

UNDERWATER MOLDS

One of our clients, a large dredging firm, has taken a contract for inspection of underwater structures of concrete and steel. This contract calls for making molds of damaged parts of the structures. They have asked us to locate the manufacturers of products that can be used for making molds underwater.

We thought, possibly, your magazine has advertised such a product or mentioned it in your reporting, but have been unable to locate such information. We would appreciate any information you might furnish us.—A.C.P.

We don't know of any type of material that can be used for this service. If any of our readers know of such mold material we would appreciate hearing from them so that the information can be passed on to our inquirer.—ed.

VERTICAL DIE CASTING MACHINE

We have received a letter from one of our customers along with sample parts which he claims are produced on an "Impact Die Casting Machine." He further says:

"It is a vertical die cast machine. The pouring spout is in the lower half of the die, with the piston beneath the spout. After the metal is poured, the die is closed, and the piston rams the molten metal into the cavity."

"Aluminum 99.9 pure can be cast, and anodized by this method. Zinc can also be cast without any change in the procedure. The cost of casting is usually the same or less than conventional methods."

We have tried to check this particular process, and we have made no progress. We hope you can help us with information about a machine like this and who manufactures it so we can contact the supplier and get further technical information.—J.A.S., director of engineering.

We don't know of any company who builds machines of this general type. We have, however, referred this reader to the companies who make vertical die casting machines.—ed.

Here are some ideas for name plates and lettering on die and permanent mold castings

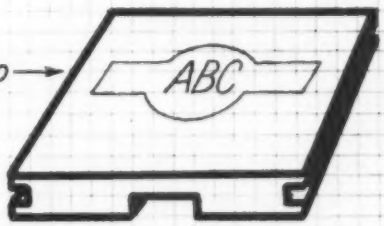
use these
Design Tips
for lower costs
-better products

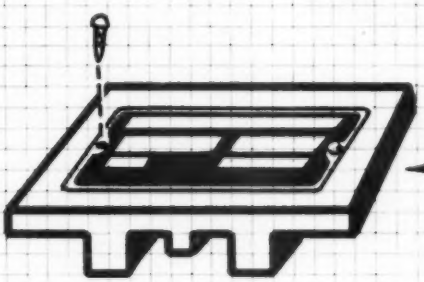
Specify raised letters. They can be put in the die by routing the letters only.

Stippled effect around raised letters is easily secured by simple engraving of the die.

Raised letters on a casting can be kept bright when the part is painted by wiping while the paint is wet.

Decals are easily applied to die castings. Insignias can also be applied with silk screens.





Metal name plates can be applied to aluminum, zinc and magnesium castings with drive pins.

Special decorative effects can be obtained with electroformed paint spray masks.

Don't use recessed letters – they fill with buffing compound and are hard to clean.

Don't put lettering on a surface to be polished. Buffing and polishing will partly obscure letters.

PMM DATA OFFERED IN THIS MONTH'S ADS

the Reader Service Cards on the facing page will get you these free reference materials. Circle the numbers and mail.

"Product Standards — for Die Castings", a manual designed to help product engineers, and the "Die Casting Industry Safety Manual" are available from The American Die Casting Institute at $5.00 each.

2. Casting Supplies — Detailed information is available on Refrax Pots that retain heat, have less swelling and distortion, and are tough and durable. ACF Industries.

3. Die Castings—A brochure presents the company's "Cost-Planned" method of producing castings, from blueprint to delivery of the finished product. Advanced Pressure Castings, Inc.

4. Dies & Related Tooling—Complete facilities list and technical data is available on dies, hydrotels, pantographs, rotary head mills and jig mills produced by the Alliance Mold Company, Inc.

12. Melting Furnaces — Literature describes the Ajax Engineering Company's Duplex Ajaxomatics. For a complete cycle the operator only has to push a single button.

13. Colloidal Dispersions—Bulletin No. 425, offered by Acheson Colloids Co., gives technical data on "dag" Colloidal dispersions for cleaner parting and smoother-surfaced castings.

15. Sintering — The "Engineering Handbook of Powder Metallurgy", and Catalog No. 58, which lists 2,227 sizes of completely finished cast bronze and sintered oil-filled bearings, are available from Bunting Brass & Bronze Co.

16. Die Casting Trim Presses—and die casting machines, that will meet your exacting requirements, are described in literature from B & T Machinery Company.

18. Compacting Press — A new 50W low-cost compacting press, that is designed for versatility and has a rated pressure of 50 tons, is described in technical literature from the Hamilton Div., Baldwin-Lima-Hamilton.

19. Die Casting Machines — Literature describes a small die casting machine that can produce castings weighing up to 1 lb., at a rate of from 600-1000 shots per hour. DCMT Sales Corp.

21. Hydraulic Press — for forming, shearing, swaging and trimming is described in technical data from Bausenbach Hydraulics Div., Buffalo Metal Container Corp.

23. Die Casting Machines — A line of low-cost, hydraulic high speed equipment is described, with specifications, in a folder from American Die Casting Machinery Co.

24. Automated Die Casting — A brochure from Cast-Master, Inc. describes a multiple cavity loader-unloader that loads laminations, die casts, trims, and unloads 4 rotors automatically.

25. Investment Casting — with the Minicast process that can hold dimensional tolerances as close as plus/minus 0.001", is described in a technical brochure from Casting Engineers, Inc.

28. Seven Models — of hydraulic die casting machines are described in literature from The Cleveland Automatic Co. Included are complete machine specifications and prices.

29. Fire-Resistant Hydraulic Fluids — A new technical bulletin, "Celanese Safety Series", is available from Celanese Corp. of America on their Cellulubes that are available in six controlled viscosities.

31. "Furnace Maintenance" — and "Proper Fitting Hardware", are two brochures available from the Crucible Manufactures' Association.

33. Refractories — Technical data on the properties of Refrax refractories, is available from The Carborundum Co.

39. Die Castings—A 16-page facilities folder is available from the Dollin Corp. on their die-casting techniques that solve rigid design requirements in zinc and aluminum castings.

40. Investment Casting Cores — Du-Ceramic, a new material for investment casting cores, is described in technical literature from Du-Co Ceramic Co.

41. Sprue Bushings — sprue spreaders ejector pins and cavity retainer sets are described in literature from Detroit Mold Engineering Co. Complete specifications and prices are included.

45. Die Profiler—Price List DV-68 describes a flexible shaft reciprocating tool for grinding, filing, scraping, honing, lapping and polishing. Engis Equipment Co.

51. Die Castings—"Small Die Castings Exclusively" is the title of a new bulletin from Gries Reproducer Corp. The company's method for delivering parts of high uniformity, with close tolerances, is explained.

52. Zinc Alloy Facts—"Reference Book and Guide on Zamak (Zinc Base) Die Casting Alloys", offered by Henning Bros. & Smith, Inc. gives valuable production and design data.

53. Die Casting—"Behind the Scenes" is a brochure from Hampden Brass & Aluminum Co. on their complete facilities for meeting your die casting requirements, regardless of part size.

56. Die Casting Machines — Literature is available on the Hydraulic Press Mfg. Company's die casting machines that are available in 200 to 800 ton capacities.

57. Dry Hearth Furnace—Bulletin C-80 describes how aluminum is melted faster and better in the Hevi-Duty Electric Company's double-chamber dry hearth furnace.

59. Power Presses — built to order. Catalog No. 59, from Johnson Machine & Press Corp., gives complete information on their line of inclinable, straight side, gap and horn presses.

60. Die Casting Compounds—and other specialty lubricants and coolants are described in bulletins offered by Fiske Brothers Refining Co.

61. Compacting Presses — A complete catalog is available on the Kux Machine Company's presses that feature push button control, positive mechanical pressure stop mechanism, secondary lower punch mechanism, two independent feed shoes and built in ball bearing leader pin guide bars.

Die Casting — "Latrobe Castings" tells the story of the Latrobe reputation for workmanship, service and economy on both small and large quantity production runs. A copy of this booklet may be obtained by writing on company letterhead to: Latrobe Die Casting Co., Latrobe, Pennsylvania.

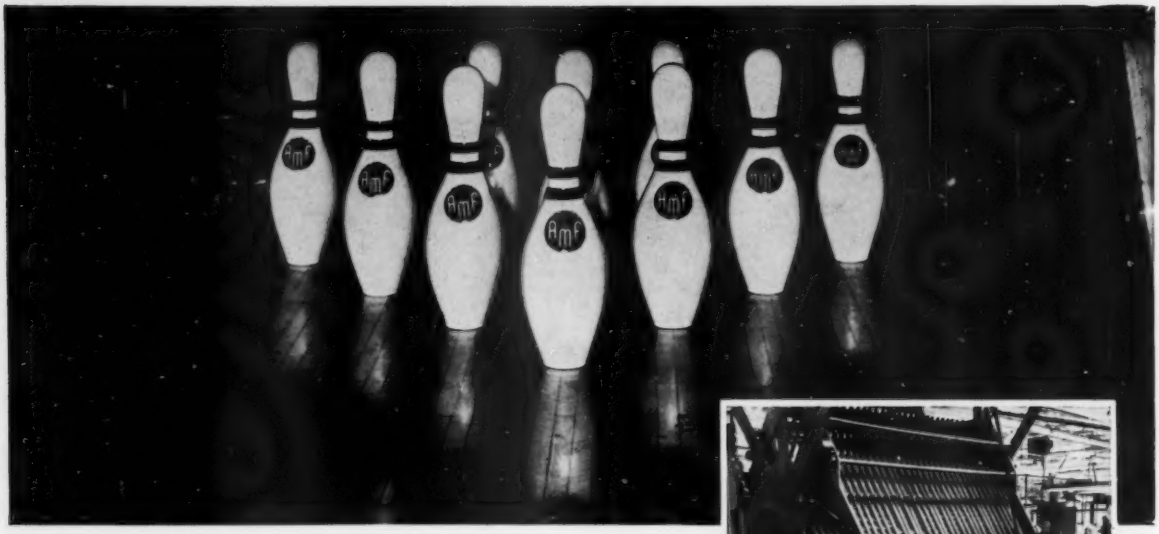
continued on page 74

PMM Finishing Section

The specialized finishing methods, equipment and materials used to machine, assemble, surface condition or surface coat precision metal molded parts are presented here. This includes all secondary operations which convert a raw casting to a finished product.

"Electrostatic spray painting saves gallons of paint in the finishing of miniature cars." . . . *see page 69*

Report from AMF...Leading Manufacturer of Automatic Pinspotters.



ALMCO Barrel Finishing Solves $37,000 Problem By Improving Finish On Track Mechanism

At American Machine & Foundry's Buffalo plant, Almco barrel finishing equipment imparts a fine microinch finish to distributor tracks used in bowling's automatic pinspotter.

HERE'S HOW ALMCO BARREL FINISHING saves American Machine & Foundry Co. $37,000 a year on an intricate product — an automatic pinspotting machine!

The pinspotter — a fully-automatic unit for setting bowling tenpins — had developed an isolated problem spot: A nylon gear which meshed with the teeth of the distributor track was rubbing against microscopic rough spots and surface irregularities. This caused the gear to wear at a faster-than-normal rate.

IMPROVING THE TRACK FINISH by usual methods required about 70 minutes for each track. Cooperation between AMF and Almco engineers, however, resulted in a special "fixture" to hold 29 track units in an Almco Model DBF-800-48-1 barrel finishing machine.

Tracks now attain a 32 microinch finish at a time rate of 10 minutes each. Costs were cut $37,000 annually, and the complete Almco installation actually paid for itself in less than five months!

Do you have a finishing problem on large parts? Or do you have smaller parts that must be accurately deburred and polished? In either case, find out what Almco barrel finishing can do for you.

ALMCO'S TECHNICAL STAFF will examine your product parts and provide sample processing. You'll get a detailed report with recommendations. No obligation, of course. Send in your sample parts with specification requirements. Your Almco sales engineer can make the arrangements, if you wish.

Sample parts processing is conducted in this modern Almco test lab. Simply write on letterhead to request arrangements or send parts direct to Almco at Albert Lea, Minnesota. Enclose specifications required.

Send for Free Barrel Finishing Handbook

52 pages of case history facts and descriptions of barrel finishing processes. Detailed cost charts on finishing of typical parts. Send for your free copy today.

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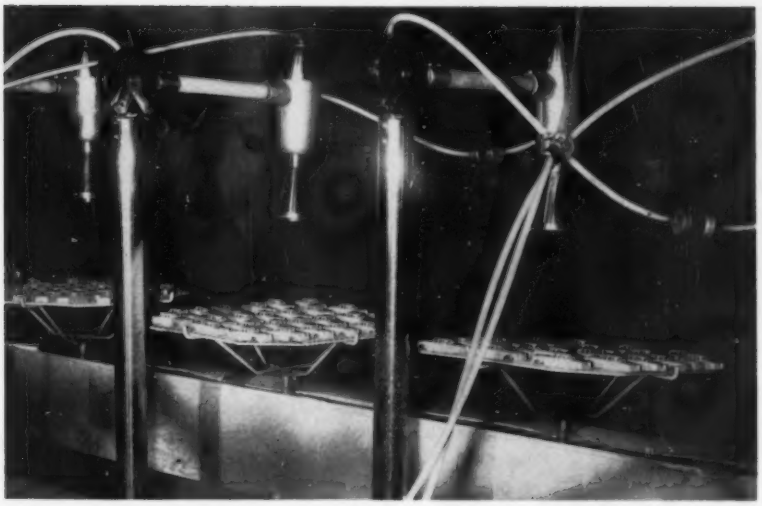


ELECTROSTATIC PAINT spraying is quickly and inexpensively installed. Paint and solvent saving will often pay for the new installation in a short time.

Spray Painting Die Cast Toys

THINK you could spread a single gallon of enamel over 5,500 car bodies? It can be done (if the automobiles you are painting are miniatures of Fords, Plymouths and Chevrolets) and if you are using an electrostatic spray paint system.

The best Dowst Manufacturing Co. could do with its hand spray system was 1,800 bodies per gallon. Then they installed a Ransburg No. 2 Electrostatic spray unit. Now they paint 5,500 to the gallon, a paint saving of 60 to 65%. This in itself is a convincing argument. But, there were other features that helped to convince Dowst.

This company makes 25 million miniature automobiles a year. It has talked about automatic spray painting many times before. But hesitated because it thought it wouldn't be able to keep high output without increasing their labor force. It took a demonstration to convince the management that electrostatic spray painting was the answer.

With the old system, the zinc die cast bodies were loaded on trays and then placed on a conveyor which carried them to the water-wash spray booths. Here an operator would manually rotate the tray while trying to coat the parts uniformly. It is not always possible to coat curved surfaces evenly. The result was a high reject rate of from 4 to 5%. After painting, the trays continued on the conveyor to the ovens. Then the bodies were carried to the final operation; inspection, assembly and packaging.

The electrostatic system makes the painting automatic. The bodies are placed in redesigned trays. Each tray holds from 25 to 60 parts, depending upon size and are carried on a spindle-type conveyor 350-feet long. The trays move into the electrostatic spray area at 16 feet per minute; 2 feet per minute faster than under the old system. Once in the area, the trays automatically start to rotate at a set speed.

As the trays pass under the four atomizing bells, the charged droplets of paint are attracted to the car bodies. This results from the high electrostatic potential between the atomizing disc and the car bodies which are grounded.

Here's how the system works.

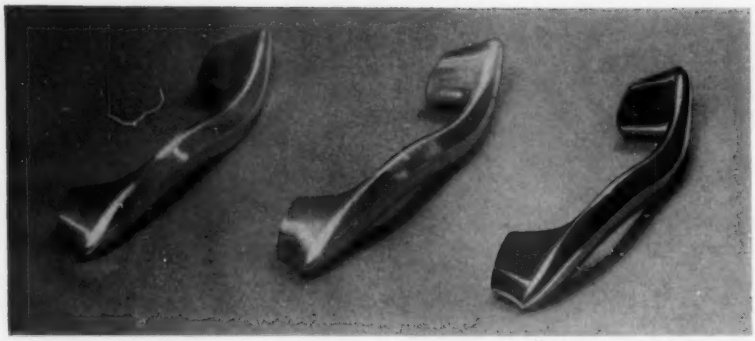
Positively charged droplets of paint are sprayed from an atomizing disc. Since the paint is charged it will all go to some point where discharge can take place. In this case it is the car bodies which are grounded. Since the field varies as the fourth power of the distance, the paint droplets will take the shortest path to the ground. The paint's desire to discharge and the nearness of the grounded bodies results in almost complete absence of over-spray, a paint saver.

The amount of paint deposited on the bodies can be controlled by balancing the speed of tray rotation, speed of the conveyor, the voltage drop across the air gap, the atomizing disc speed and the rate of paint feed. This accounts for the great paint savings over hand spraying which used to depend on each operator's skill.

One of the additional advantages of electrostatic spray painting is that the paint droplets can be made to curve around, to coat undersurfaces if desired.

Rejects from painting dropped to 1% with the new system.

continued on next page



Three stages in the finishing of a zinc base die casting. Casting at left was buffed. Center casting was buffed and electrocleaned in Oakite 195. Casting at right was buffed, electrocleaned in Oakite 195, and plated. Note that center casting retains full buffed lustre and color after its electrocleaning in Oakite 195.

New electrocleaner for zinc die castings assures brighter plate... and cuts rejects!

Plating of zinc base die castings now becomes a more dependable, more economical operation with the introduction of Oakite 195, a *non-etch* anodic cleaner.

More dependable because the casting surface is not etched and its color not changed or darkened. Soils and films are effectively removed, yet the castings retain their buffed lustre. To help further in preparing the way for uniformly good plating results, this new electrocleaner has excellent rinsability in hot or cold water, and low foaming tendency.

And more economical by far, because of the sharp reduction in rejects due to poor pre-cleaning.

Oakite 195 can be used with direct, reverse and periodic reverse current, in still tanks and fully automatic set-ups. Where only a single solution tank is available, it is being used to clean a variety of metals—zinc, steel, brass, copper.

For more information about this important new development in cleaning before plating, write for descriptive folder F-10466 to Oakite Products, Inc., 34G Rector Street, New York 6, N. Y.

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SPRAY PAINTING

(Continued from page 69)

From the spray area the parts continue on the conveyor to the oven where the paint is baked at 350 F. for a period of 5½ minutes. Then, as in the old system, the parts are moved on for final inspection, assembly, and packaging.

Since the installation of the electrostatic system, production has been stepped up 25%. But the company has not been able to realize the full advantages of electrostatic spray painting, because of their oven limitations. It used to take one spray booth 16 hours to keep the ovens operating at full capacity. Now, it takes 1 booth only 9 hours.

Another advantage, that the company noted, was that there is no down time to change colors. The miniatures are painted in seven basic colors, and during a normal days operation the color is changed several times.

To make the change from hand spray to automatic electrostatic spray painting required only a week of actual down time. During the rest of the installation the company was able to work around the installers.

H-12 STEEL

continued from page 48

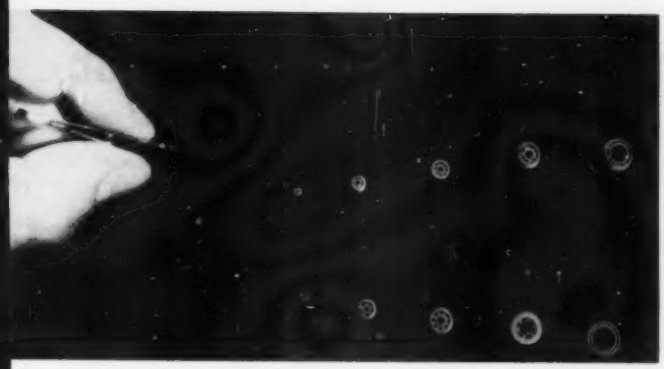
Decarburization or loss of carbon at the surface may be caused by improper atmospheres in heat treating or it may be due to insufficient stock removal.

Carburization or high surface carbon is usually caused by improper atmospheres or by pack hardening.

The nitrided specimen represents a gas nitrided case. It is notable that H-12 steel nitrides as well or better than special nitriding steels.

On annealing it is desirable to have small, evenly dispersed carbides for good response to hardening and for the best properties.

These photomicrographs are submitted with the thought that they will be helpful to those who heat treat and use hot work tool steels so that they may better understand the difference between a good tool and a poor one.



CLASSED AS MINIATURE, these parts are finished at low cost in Almco Superspeed precision barrels. One machine and one man replaces four men formerly needed.

Barrel Finishing Tiny Parts

TINY metal parts, some so small that 500 can be loaded into a thimble, can be finished successfully, on a mass production basis, in precision barrels.

An example of the tiny parts which can be barrel finished are the races for miniature ball bearings. On these parts, the surface finish of both the inner and outer bearing races had to be improved and burrs, sharp edges and machining lines removed.

A normal barrel charge runs from 1000 to 4000 parts and in some cases, very tiny parts, as many as 15,000 parts. Normal processing requires double loading during the production cycle and some times four or five loadings.

Final inspection is with a 30 power microscope and the races must meet ABEC 5 and 7 tolerances.

This new method of finishing these small parts should help in the finishing of tiny investment castings that are becoming so important today.

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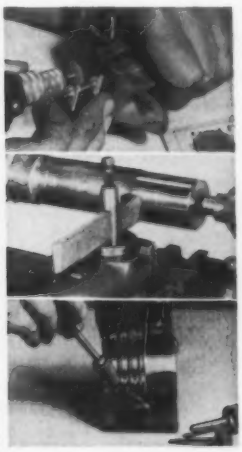

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By designing for brass powder metallurgy, there are other advantages:

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THIS BOOKLET

will assist you in evaluating this modern production method in terms of your particular needs.

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THE NEW JERSEY ZINC COMPANY
160 Front Street, New York 38, N. Y.

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EXTRUSION LUBRICANTS

continued from page 58

the flash, which is back-extruded from the billet skin, locks the butt to the dummy block. Separation is often very difficult. Here again, a water dispersed graphite has been found most effective. Sometimes, the same material that is used as a lubricant is used for a parting compound. Generally, however, it is best to use a semi-colloidal graphite diluted with five times its weight with additional water. The simplest procedure is to dip the dummy block in a pan of the solution. The residual heat in the block is adequate to evaporate the water and leave a dry adherent film of graphite on the dummy. Removal of the butt end of the billet is then simple.

OPPORTUNITIES

continued from page 15

POSITIONS OPEN

DIE CASTING ENGINEER—to estimate tool and product costs in zinc & aluminum. Located in metropolitan New Jersey. Submit complete resume. All replies confidential. Write Box No. 1659.

ALUMINUM DIE CASTING PRODUCTION SUPERINTENDENT
For position with midwest die casting company, opportunity for participation in growth of company. State experience, education and salary requirements. Box No. 1759.

EQUIPMENT

60 Used Die Casting Machines; send for list. Will rebuild your machine to your spec's. Fred C. Ziesenheim, 523 King Avenue, Marion, Ohio.

DIE CASTING COMPANY NAMES NEW PLANT MGR.

James J. Wish has been appointed plant manager for HADLOCK & TEMTE, INC. Mr. Wish has had many years experience in the die casting field and was formerly superintendent at Admiral Die Casting Corp., Div. of Portable Electric Tools, Inc.

HIS JOB

....TO BUILD YOUR PROFITS!

THE *Roto-Finish* CUSTOMER'S MAN

There's nothing unique about stressing product quality. But, at Roto-Finish we have an added incentive. The success of the Roto-Finish Customer's Man *depends* on providing the kind of dependable, mass-production finishing service which builds customer satisfaction, and results in a steady repeat business.

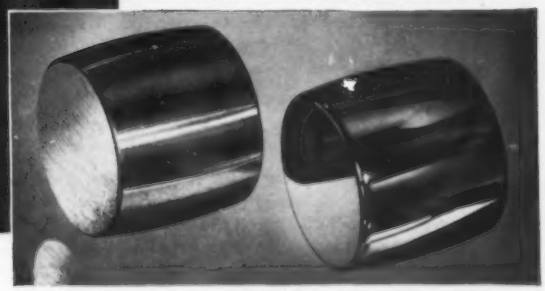
TRIAL AND ERROR FINISHING IS COSTLY

If you're now barrel finishing, our Customer's Man will welcome an opportunity to work with you in your own plant to show you how to get the finish you want, faster, and at lower cost.

If you're hand finishing, he can show you how to save up to 80% of your present finishing costs.

WANT PROOF? Then write or phone your Roto-Finish Customer's Man today.

ROTO-FINISH CASE HISTORY



*This photo is unretouched.
MATERIAL: Bearing steel, 61 Rockwell C Scale.
DIMENSIONS: 1.213" dia. x 1.015".
FINISH BEFORE: Ground to 10 RMS.
FINISH AFTER PROCESSING: 2 to 4 RMS, (with no dimensional change).

Roto-Finish COMPANY
3716 Milham Road
KALAMAZOO, MICHIGAN
Phone: Fireside 3-5578

ROTO FINISH

FOREIGN REPRESENTATIVES: ARGENTINA—Taller—Buenos Aires ● AUSTRALIA—A. Flavell Ltd.—Cheltenham ● BRAZIL—Commercial E. Industrial de Fornos Werco, Ltd.—Rio de Janeiro ● CANADA—Canadian Hanson & Van Winkle Co., Ltd.—Toronto ● ENGLAND—Roto-Finish Ltd.—Hemel Hempstead ● FRANCE—Societe Roto-Finish—Paris ● GERMANY, AUSTRIA, NORWAY, SWEDEN, SWITZERLAND—Metallgesellschaft A. G.—Frankfurt, a. M.—Germany ● HOLLAND, BELGIUM, LUXEMBURG—N. V. Roto Finish Maatschappij—Delft, Holland ● ITALY—Societa Roto-Finish a R. L.—Milan ● SPAIN—Instituto Electroquimico, S. A.—Barcelona

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now

you can get this brilliant finish directly on zinc die castings!

No electroplating--no mechanical finishing!

PART AS CAST

TREATED WITH NEW IRIDITE

NEW IRIDITE (Cast-Zinc-Brite)

brightens zinc die castings by chemical polishing, protects against corrosion

NOW, FOR THE FIRST TIME you can get a brilliant, decorative finish directly on zinc die-cast parts . . . without mechanical finishing, without electroplating! The luster is provided by the *chemical polishing* action of new Iridite (Cast-Zinc-Brite) solution. Even surface blemishes, such as cold shuts, are brightened by this new process. No electrolysis. No special equipment. No specially trained personnel. Just a simple chemical dip for a few seconds and the job is done. And, this new Iridite has been *tested and proved* in production.

CORROSION RESISTANCE, TOO! New Iridite (Cast-Zinc-Brite) provides exceptional corrosion resistance for bright-type chromate finishes . . . also guards against blueing or darkening by eliminating zinc plate formerly required in bright chromate finishing of zinc die castings.

AS A BASE FOR ELECTROPLATING—Lower mechanical finishing costs are possible where plated finishes are *required* since the brightness provided by this new Iridite may be sufficient.

LET US SHOW YOU what Iridite (Cast-Zinc-Brite) can do for you. Send us at least a half-dozen typical zinc die-cast parts for FREE PROCESSING for your own tests and evaluation. Or, for immediate information, call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified 'phone book. *IMPORTANT: when you give us samples for test processing, please be sure to identify the alloy used.*

Allied Research Products, Inc.

4004-06 EAST MONUMENT STREET

BALTIMORE 5, MARYLAND

***Manufacturers of* IRIDITE®, IRILAC™, ARP® Brighteners and Plating Chemicals—West Coast Licensee: L. H. Butcher Co.**

For more information circle No. 105 on the Reader Service Card

DATA IN ADS

continued from page 66

65. Die Casting Machines — Information on a complete line of die casting machines is available from Lester-Phoenix, Inc. The machines feature reliable clamping, and are readily adapted to vacuum die casting.

66. Die Castings — Literature and design information is available from Litemetal Diecast, Inc. on the company's die casting facilities for producing parts of any size.

74. Vacuum Die Casting System — Technical data from Morton Mfg. Co. describes their vacuum die casting system that offers increased production, better castings, fewer rejects, and finer finish.

78. Cutting Costs — with brass powder metallurgy. This is the theme of a booklet evaluating this production method in terms of particular needs. The New Jersey Zinc Company.

80. Die Casting Facilities — A brochure prepared by the Paramount Die Casting Co., describes the company's facilities for making specialized die castings.

82. Cleans, Lubricates — This is what the Air-Lube System, manufactured by Pierce-Waller, Inc., does. A data folder describes this system that removes loose flash from the mold with an air blast, then, lubricates all mold surfaces evenly.

83. Vacuum Die Casting — Literature on vacuum die casting and information on the Premier Die Casting Company's facilities for producing custom die castings is available from the company.

87. Sintering Savings — A brochure, "How to Cut Costs With the Remet Powdered Metal Process", is available from Reese Metal Products Corp.

88. Iron Powders — If you design or fabricate iron powder parts, you'll be interested in this 48-page book from Republic Steel Corp., entitled "Technical information on Republic Iron Powders".

89. Molds — 4-unit master-molds that allow casting of four different sizes, shapes and products at one time, are described in literature from Richards Tool & Mold Co.

92. Stainless Steel Ladles & Skimmers— which are 75% lighter than cast iron and have extremely long life, are described in literature offered by Spincraft, Inc.

95. Fire-Resistant — hydraulic fluids composed of water and synthetic materials. A 6-page booklet from the D. A. Stuart Oil Co., describes

how these fluids are formulated to provide corrosion protection and effective lubrication. Technical data tables on specific properties, test data, etc. are included.

103. Fire Prevention Data—The booklet "Ucon Hydrolubes Spell Safety", gives technical data on fire-resistant fluids, which eliminate the common fire hazards connected with hydraulic operations. Union Carbide Chemicals Co.

106. Barrel Finishing Handbook — This 52-page handbook, from Almco, Queen Products Div., contains case histories and descriptions of the barrel finishing process.

107. Rubberized Abrasives — for microdeburring, smoothing, cleaning, polishing, etc., are described in a catalog and application data from Cratex Mfg. Co.

108. A Drilling & Tapping Head—that is adjustable to any pattern of holes, is described in literature from Errington Mechanical Laboratory, Incorporated.

113. Vacuum Degassing—in die casting die steels. A bulletin from Universal-Cyclops Steel Corp., explains this melting technique and the company's facilities for tool steel degassing.

114. Melting Kettles — "The "Do's and and Don'ts of Cast Iron Melting Kettle Operation", is a booklet designed to help you increase your kettle life. C. H. Milles Foundry Company.

116. Electrocleaner — for zinc die castings, that assures a brighter plate and cuts rejects, is described in literature from Oakite Products, Incorporated.

118. Cut Die-Curring Time—Information and samples are available from American Charcoal Co. on a new process which conditions a green die for immediate trouble-free production.

27. Die Castings—Technical data bulletins on zinc and aluminum die castings, are available from Chicago White Metal Casting Inc.

NEW EXPORT MGR. FOR ELECTRIC FURNACE CO.

Robert C. Hiltbrand has been named manager of export sales for THE ELECTRIC FURNACE CO. Hiltbrand joined the company in 1938 and has worked in the mechanical engineering, field erection, electrical and fuel divisions and other departments.

ALMCO ANNOUNCES PROMOTIONS

SARTOR JOHNSON HARDIN

Three promotions have been announced by ALMCO, QUEEN PRODUCTS DIV. Don Johnson is now sales manager, Al Sartor is branch manager of the Detroit operation, and Bruce Hardin is now sales engineer in the Michigan area.

Admiral reports 70% labor savings... 50% material cost reduction ... 90% decrease in rejects on polishing operations with a

Hammond FLAT FINISHER

HERE'S WHAT THEY SAY

Admiral CORPORATION 3800 CORTLAND STREET CHICAGO

September 10, 1958

Mr. S. H. Miller
Harmond Machinery Builders, Inc.
1600 Douglas Avenue
Kalamazoo, Michigan

Dear Mr. Miller:

Since installing a Harmond Flat Finisher Model #FF6-1, we have been able to establish the following benefits:

1. A 70% polishing labor savings.
2. A 50% reduction of polishing material cost.
3. A 90% decrease of rejects caused in polishing.

Qualitatively, we feel this machine does a better job than by hand. It gives us a positive control over the same amount of surface material removed, and is easily able to meet all our production requirements.

As a result of this experience we feel that the purchase of the Harmond Flat Finisher has been a wise and profitable investment.

Yours very truly,
ADMIRAL CORPORATION
C. S. Rosato,
VICE PRESIDENT, PRODUCTION

The above letter is typical of the reports we receive from users of Hammond Flat Finishers. For fast, uniform, economical finishing of flat work such as sheets, bars, strips, stampings and extrusions Hammond's are *second-to-none*. One operator grinds, polishes and deburrs on one machine in one operation. Available with 1 to 6 heads, 6" to 12" wide – handle work up to 6" high. Write for catalog.

SEND SAMPLES
Send us one finished and several rough samples. You will receive a complete Engineering Report and Production Analysis without obligation.

Hammond Machinery Builders INC.
1642 DOUGLAS AVE. • KALAMAZOO, MICHIGAN

For more information circle No. 109 on the Reader Service Card

USEFUL LITERATURE, CATALOGS, MANUALS

any of these technical publications may be obtained by circling the appropriate numbers on the Reader Service Cards, Pages 66, 67

PROCESSES

Centrifugal Casting: 154

CENTRIFUGAL CASTING CO.—Better products at lower cost, is the theme of an illustrated brochure on the centrifugal casting process. New casting applications and the production steps involved are described.

Extrusions: 155

MIDWEST ALUMINUM CORP.—A sample handful of extruded aluminum shapes is yours for the asking. This "Idea Kit" is intended to suggest an idea or two to the product designer on the possible uses of extrusions for product simplification, production short-cuts, decorative trim, etc.

Investment Castings: 156

MISCO PRECISION CASTING CO.—"Pointing The Way" is the title of a 20-page brochure that explains the company's facilities for producing investment castings for the aircraft industry.

MATERIALS & EQUIPMENT

New Iron Powder: 157

REPUBLIC STEEL CORP.—Bulletin gives complete technical data on Alloy Powder HS 6460. The powder is for use in stressed parts produced with existing operating equipment.

Die Steel: 158

ALLEGHENY LUDLUM STEEL CORP.—Data sheet describes Sanamore-EZ, a 5% chromium air hardening die steel with uniformly distributed sulfide particles.

Cold-Wall Vacuum Furnace: 159

F. J. STOKES CORP.—The sintering of powder metal parts compacted with a very high melting point, is practical in this heat-treating furnace. The unit will operate at 2200 C.

C-Frame Presses: 160

HYDRAULIC PRESS MFG. CO.—Two bulletins illustrate and describe manual and automatic C-Frame presses for trimming, pressing, compacting, etc.

Precision Tools and Gages: 161

ENGIS EQUIPMENT CO.—Catalog contains photographs and descriptions of tools, gages, and inspection devices for measuring micro inches or miles, straightness, parallelism, etc.

Iron Powder: 162

ALAN WOOD STEEL CO.—Literature describes a high grade iron powder made by the H-Iron Process. Briefly, magnetite concentrate of high purity is reduced by hydrogen (97% purity) at 400 psi. and 1000 F., and reheated in protective gas to 1500 F. to prevent reoxidation.

Beryllium: 163

BRUSH BERYLLIUM CO.—Technical brochure gives the physical constants, mechanical properties, tensile strength, strength-to-weight ratio, ductility, etc. of QMV Beryllium.

Melting Kettle Operation: 114

C. H. MILLES FOUNDRY CO.—The "Do's and Don'ts" of cast iron melting kettle operation, is the theme of a 12-page brochure that will help you increase your kettle life.

Die Casting Machine: 165

PECO SALES LTD.—A specification sheet on the company's 750 ton, Model 60DC20 die casting machine, is available. Data on the die lock, injection unit, and general machine features is included.

Melting Furnace: 166

INTERNATIONAL FOUNDRY SUPPLY CO.—Specification sheets on the company melting furnaces that can melt 200 lbs. of aluminum in 20 minutes, 500 lbs. of brass in 30 minutes, and 300 lbs. of iron in 45 minutes, are available.

Cemented Carbides: 167

ALLEGHENY LUDLUM STEEL CORP.—"Cemented Carbides for Industry" is a 32-page booklet listing the company's complete lines of brazed tools, inserts, tool holders and blanks.

Iron Powders: 168

REPUBLIC STEEL CORP.—A 52-page technical booklet on the company's cdf and MS iron powders, is available.

Mold Bases: 169

DETROIT MOLD ENGINEERING CO.—"Engineering Design Specifications on Standard Mold Bases" is a technical brochure on the company's complete product line.

Hydraulic Presses: 170

HANNIFIN CO.—Open gap and column type high-speed hydraulic presses which range in capacity from 1 to 150 tons, are described in a 24-page booklet.

Colloidal Dispersions: 171

ACHESON COLLOIDS CO.—Two data sheets give the properties, necessary surface treatment, mixing, and application information on Emralon 310 and Emralon 320, two pigmented, resin-bonded coatings.

Die Casting Machines: 172

CLEVELAND AUTOMATIC MACHINE CO.—Technical bulletin describes a line of Universal High-Pressure Hydraulic Die Casting Machines that range in locking pressure from 50 to 1000 tons.

Aluminum Extrusion Press: 173

BIRDSBORO STEEL FOUNDRY & MACHINE CO.—Specification data sheets are available on the Birdsboro 3,000-ton oil hydraulic extrusion press that has an extrusion speed up to 42" per minute.

R-F Induction Heating: 174

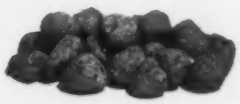
SYLVANIA ELECTRIC PRODUCTS, INC.—Booklet describes the characteristics and functions of a wide variety of power tubes in R-F induction heaters.

continued on page 78

Now's the time...here's the place

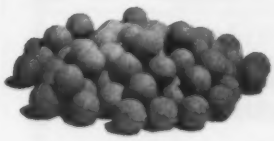
The big Norton Sample Processing Department solves your finishing problems with a wide variety of tumbling equipment . . . and the right abrasive to do the job.

to find the tumbling abrasive you need

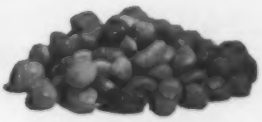


ALUNDUM* TUMBLEX* "A" Abrasive. For general barrel finishing. Removes flash, scale, tool marks and burrs, while forming radii and finishes to required micro-inches. Seventeen sizes.

ALUNDUM TUMBLEX "T" Abrasive. Bonded, triangular and fast-cutting for special shaped parts. They won't wedge in work slots or holes. Four sizes.



ALUNDUM TUMBLEX "S" Abrasive. Bonded spheres that get into areas where other shapes can't reach. Exceptionally dense and long lasting. Five sizes.



TUMBLEX "N" Abrasive. Natural stones, exclusively Norton. For high lustre, especially on die castings and soft metal. Rounded shape brings up highest lustre. Seven sizes.

G-341

If you're still finishing metal parts the long, hard way, now's the ideal time to find the fastest, most effective barrel finishing equipment, methods and abrasives.

For example, one leading aircraft parts manufacturer reports saving over $90,000 yearly by shifting from hand-finishing to barrel finishing with Norton TUMBLEX abrasives.

There's one sure way for you, too, to get these cost-cutting, product-improving "Touch of Gold" advantages. Your metal parts can range from tiny needles to hefty forgings . . . may be simple or complicated, hard metals or soft . . . may require deburring, descaling, better color and closer finish. Just send sample parts to our Sample Processing Department. They'll be returned to you completely finished to requirements, with a detailed report. Or, next time you're in our area, drop in and learn how your finishing can be improved.

NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors all around the world.

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1 RETAINS HEAT: low nickel-chromium alloy cast iron absorbs heat fast, holds it with minimum reheating.

2 LESS SWELLING AND DISTORTION because of tapering wall thickness, scientific side-wall angles.

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4 INSPECTED THREE TIMES to assure you of only the finest workmanship and soundness in every detail.

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USEFUL LITERATURE

continued from page 76

FINISHING

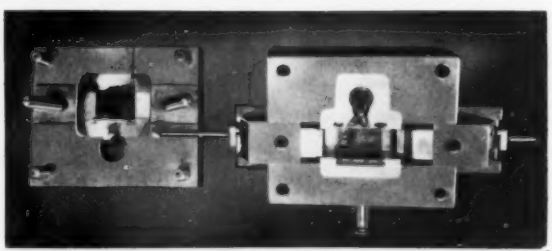
Powders For Bright Dipping: 189
CONVERSION CHEMICAL CORP.—Literature is available on Kenvert ♯30-C and ♯30-B for bright dipping copper and brass. When mixed with water the powders produce a bath that does not fume, is stable and permits easy control.

Spray Decorating Equipment: 190
CONFORMING MATRIX CORP.—Data file includes electro-formed nickel and copper masks, mechanical and air operated clamps and pressure fixtures, automatic mask washers and an automatic spray decorating machine.

Anode Plates: 191
HANSON-VAN WINKLE-MUNNING CO.—Literature describes low-sludge anode plates that corrode evenly, producing minimum metallic and carbon sediment.

Barrel Finishing Compounds and Media: 192
ALMCO QUEEN PRODUCTS DIV., KING-SEELEY CORP.—A materials price list is available where the customer can enjoy sizable discounts in ordering any of the company's 48 different compounds.

Anodizing Aluminum: 193
FREDERIC B. STEVENS, INC.—"Automatic Equipment For Use In Anodizing Aluminum" presents an analysis of principal markets, anodizing conditions, qualities of the film, and an evaluation of the film.



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. . . for the die casting industry is part of the service available from Damen. A 3-spindle Keller Duplicator, capable of three identical cavities at a time, is ready to go on your work. We can machine cavities up to 36" x 36".

Damen offers you complete engineering and tool room facilities to design and build die casting dies and plastic molds.

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Chicago 31, Illinois
Phone: UNderhill 7-8111

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Anti-Friction Phosphate Coating: 194

TURCO PRODUCTS, INC.—Brochure describes Turcoat 3557 a phosphate material for use as an anti-friction "break-in" coating and as a foundation for oil or paint.

Electrocleaner: 195

OAKITE PRODUCTS, INC.—Oakite Composition No. 195 is a non-etching reverse current cleaner. Folder describes the compound's ability to remove soils without darkening the zinc or changing the color achieved in buffing.

Aluminum Cleaner: 196

CHEMCO—Technical data sheet describes GH-30, a cleaner for removing grease and dirt from aluminum and stainless steel surfaces. It will not etch or scratch aluminum.

Ultrasonic Cleaner: 197

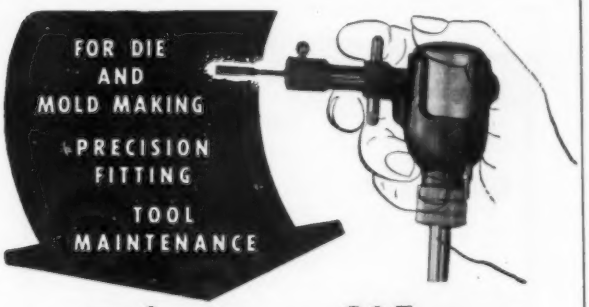
NARDA ULTRASONICS CORP.—Catalog describes a complete line of ultrasonic cleaners. Technical information is given on the SonBlaster line which ranges from 35 watt to 2.5 Kilowatt systems.

Grinding Machine: 198

STURTEVANT MILL CO.—Bulletin gives schematic drawings of the Micronizer. These units are fluid-energy grinding mills that produce pulverized fines in the lower micron ranges—below 44 microns.

Buffs: 199

DIVINE BROTHERS CO.—Technical data folder describes air-cooled metal center buffs. With the specially designed metal center the buffs run cooler and last longer.



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***Flexible Shaft* RECIPROCATING TOOL**

Fast, accurate, versatile

For grinding, filing, scraping, honing, lapping, polishing — the Di-Profiler saves hours of tedious hand labor — especially on intricate, detailed, hard-to-get-at jobs.

Driven by flexible shaft, the machine is light, sturdy, free from vibration. The speed of reciprocation is controlled by foot rheostat and can be varied from 0 to 100 strokes per second; the length of stroke is adjustable from 0 to ¼-inch.

Write for Free Demonstration or Illustrated Price List DV-19

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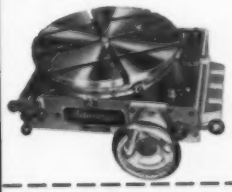
3 types for applications where conventional water lines are not permissible. Price—$2.50 Each.



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Rugged • Precision. 30 Sec. Rotational Accuracy.

Advance. **CROSS-SLIDE ROTARY TABLE**
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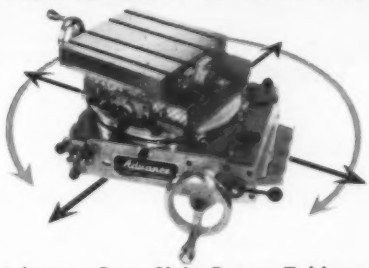
High-Priced RESULTS for LOW-COST Investment



The Advance Cross-Slide Rotary Table permits fast, precise positioning of work-pieces from one set-up. Eliminated is the series of error-inducing multiple set-ups as done on conventional rotary tables.

Save 50% to 90% of Set-up Time on Vertical Milling

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DIE CASTERS....

INCREASE KETTLE LIFE!

THIS BOOKLET TELLS HOW

- Complete with illustrations.
- Helpful ideas for extending kettle life.
- Save — heat loss, metal contamination, down time.

FREE Write for your copy.

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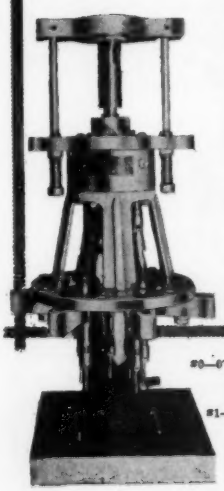
ERRINGTON

UNIVERSAL JOINT ADJUSTABLE TAPPING & DRILLING HEAD



Here's another hi-speed production tool from Errington. This dependable tool is adjustable to any pattern of holes . . . is available with 4 or 6 spindles. Positive clutch drive and reverse. Head made of the best grade sand Cast Aluminum with hardened and ground gears and spindles (made in one piece). Full grooved ball thrust bearings at all thrust points and Oilite bronze radial bearings. *Remember to do more . . . better . . . faster . . .* rely on Errington Hi-Speed Production Tools.

#0—6" to ¼" Tap Capacity
Min. centers 11/16"
Max. Pattern 5¾"

#1—7/32" to ¼" Tap Capacity
Min. centers 1⅛"
Max. Pattern 8"

LESS THAN ½ MINUTE TO CHANGE HEAD FROM DRILLING TO TAPPING OR TAPPING TO DRILLING

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Established 1891
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PMM METALS TECHNOLOGY

HIGH TEMPERATURE ALUMINUM ALLOY

Designed specifically for elevated temperature applications, a new aluminum alloy is now available from Kaiser Aluminum & Chemical Sales, Inc.

The new material was originally developed by High Duty Alloys, Ltd., of Great Britain and is produced and marketed in this country by Kaiser. It is designated as alloy 2618 and is useful up to about 500°F.

The principal alloying elements are copper, magnesium, iron and nickel.

At room temperature alloy 2618 in the T61 temper has a typical ultimate tensile strength of 64,000 psi and a yield strength of 54,000 psi. Above 300°F the new material has properties superior to either 7075 or 2015. After 10,000 hours exposure at 300°F, 2618 retains an ultimate strength of 50,000 psi and a yield of 45,000 psi. After the same exposure time at 400°F the alloy shows a 33,000 psi tensile and 30,000 psi yield.

LOWER COST CASTING ALLOYS

Two new pig alloys have been added to the line of aluminum master alloys and hardeners produced by Reynolds Metals Co.

These two alloys, 2351 and 2370, were developed to help permanent mold and sand foundries reduce costs. They can be made into alloys 355 and 356, respectively, by the addition of magnesium during shop melting. At the same time small amounts of grain refiners can be added if they are desired.

According to Reynolds, these new master alloys can lower the cost of 355 and 356 casting alloys by as much as 3½¢ per pound.

SPECIAL MATERIALS

One of the outstanding virtues of powder metallurgy is its ability to make special alloys, mixtures of metals and mixtures of metals and non-metals that can not be made in any other manner.

One of the latest of these special materials is stainless steel with a uniform dispersion of samarium oxide. Not only must the small amount of samarium oxide (0.52%) be uniformly dispersed in the matrix, but grain size of the matrix and the oxide must both be carefully controlled.

Using powder metallurgy techniques, the Sintercast Corp. of America is able to supply this tricky material as a foil 4" X 12" X 0.008" thick.

According to Sintercast, many other custom materials have been fabricated with matrices such as aluminum, nickel and tin with dispersions of boron carbide, dysprosium oxide, zirconium boride, and gadolinium oxide.

Most of these unusual materials are currently being used or investigated in connection with nuclear energy work. That they can be made, however, opens a new horizon to the metallurgist and designer who can, if costs permit, utilize all kinds of mixtures to secure the properties needed for his product.

COLUMBIUM FOR EXTREME TEMPERATURES

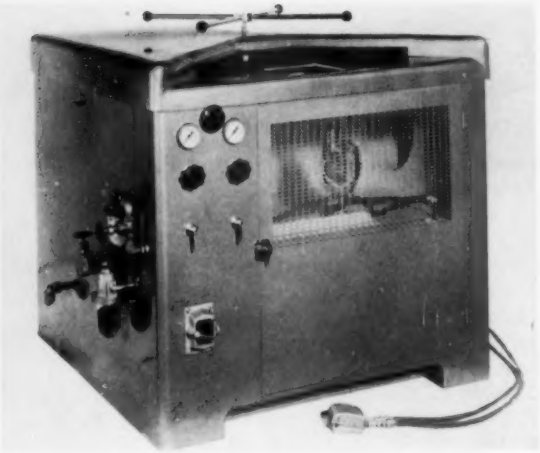
Columbium metal has the unique ability to form a stable oxide at temperatures between 1100°F. and 2200°F. This oxide forms as a solid, white coating that does not evaporate the way the oxides of many other metals do.

The oxidation resistance can be further enhanced by alloying columbium with 25% titanium. This material has from 1/10 to 1/20 the rate of oxidation of the pure metal.

Alloys of columbium with vanadium and molybdenum also show promising properties.

NEW PRODUCTS AND DEVELOPMENTS

Want complete details on these announcements? Use the Reader Service Cards. You'll find them facing page 66 of this issue



MASK WASHING MACHINE . . . *is automatic*

A machine that combines the functions of automatic spray decorating equipment with automatic, efficient mask washing, has been introduced by the CONFORMAING MATRIX CORP. The machine is said to increase production by over 25% over the use of a separate mask washer.

Four masks are attached to a rotary plate. When the operator indexes the rotary plate, the soiled mask is automatically put into the first washing station. A second mask moves from the first to the second washing station, from where a third mask passes to a blow-off. Here the pockets of solvent are removed. The third mask then goes to a drying station, from which the fourth mask emerges to go into position for continued spraying.

Circle No. 205 on the Reader Service Card

HYDRAULIC TRIM PRESS . . . *features high speed*

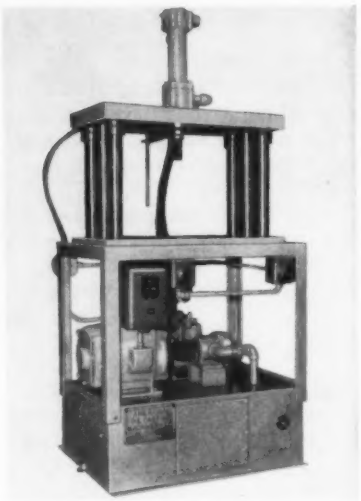
A high-speed hydraulic trimming press, especially designed for the die casting industry, has been introduced by THE AMERICAN DIE CASTING MACHINERY CO. The press features a self-contained hydraulic system.

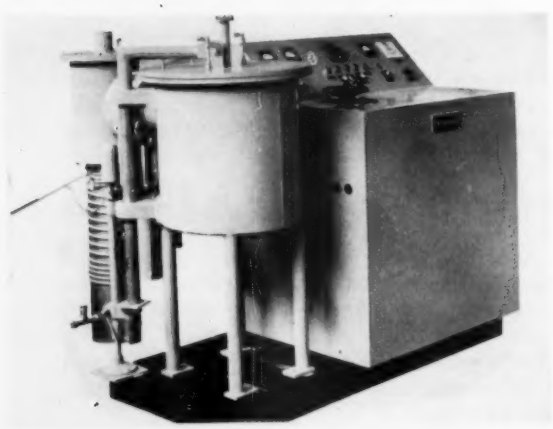
Other features of the press include a platen area that can be utilized to its fullest extent, and rigidity of the four post die set that offers uniformity in the trimming of flash. Die height can be maintained by a simple setting of the screw rod and nuts. The hydraulic system has a clean-out hole, double push buttons for safe operation, electric-operated solenoid controls, and a drain hole. Every part of the unit can be reached for easy adjustment and maintenance.

Available platen sizes are 14″ x 30″ and larger.

The unit illustrated measures 23″ wide, 33″ long, and 70″ high. It is designated as Model No. 1000, and is said to be the lowest priced precision trimming press on the market.

Circle No. 206 on the Reader Service Card



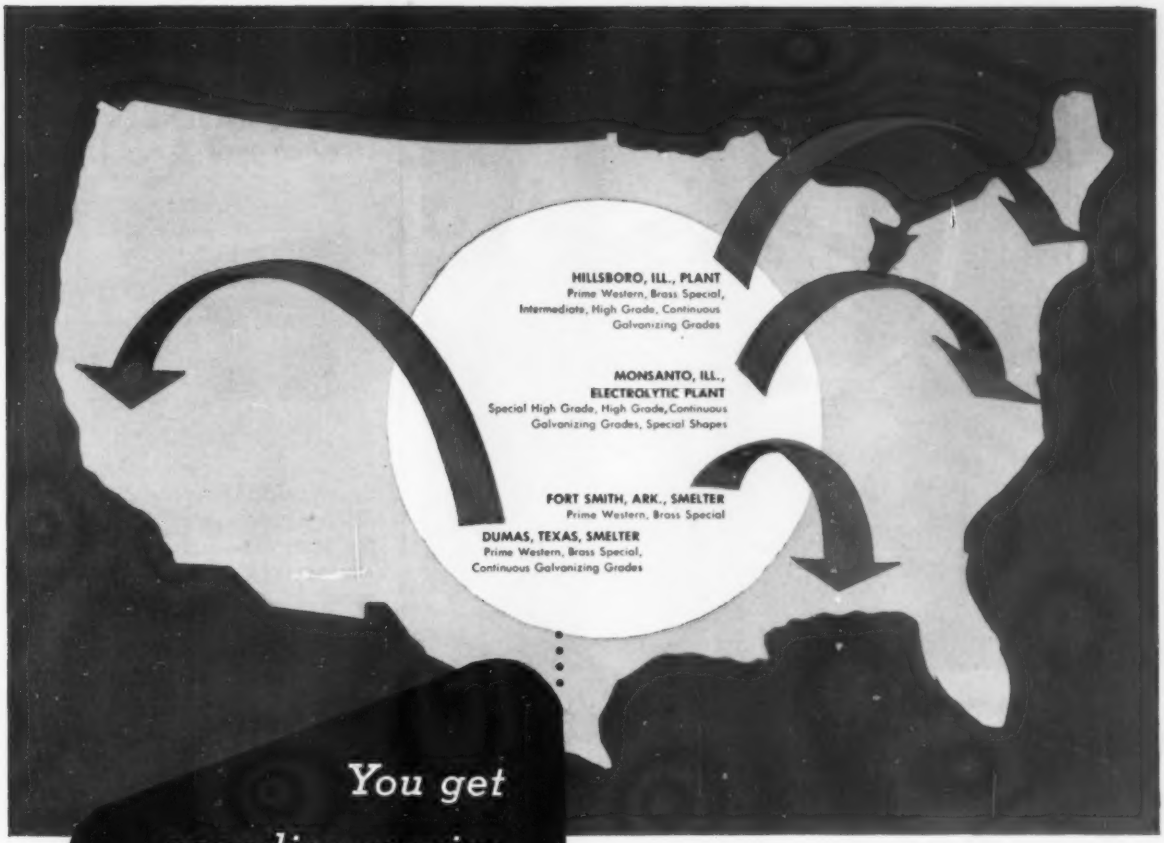


COLD WALL FURNACE . . . *operates at 4000° F.*

The sintering of powder metal parts, compacted of materials with a very high melting point, is practical in this cold-wall vacuum heat-treating furnace developed by F. J. STOKES CORP. The furnace is suitable for both experimental work and for small scale production.

The unit, illustrated with the housing removed, has a vacuum retort. Within the retort is a hot zone, 3½″ in diameter and 6½″ deep, produced by a resistance heated radiant cylinder. The hot zone is surrounded by a reflective shield and then by a water jacket. The hot-zone assembly is easily removable as a complete unit or it can be removed in separate sections.

Circle No. 207 on the Reader Service Card


HILLSBORO, ILL., PLANT
Prime Western, Brass Special, Intermediate, High Grade, Continuous Galvanizing Grades
MONSANTO, ILL., ELECTROLYTIC PLANT
Special High Grade, High Grade, Continuous Galvanizing Grades, Special Shapes
FORT SMITH, ARK., SMELTER
Prime Western, Brass Special
DUMAS, TEXAS, SMELTER
Prime Western, Brass Special, Continuous Galvanizing Grades

You get speedier service from the ZINC ZONE

Central location of American Zinc plants assures prompt deliveries of slab zinc to any point in the nation.

PRODUCERS OF

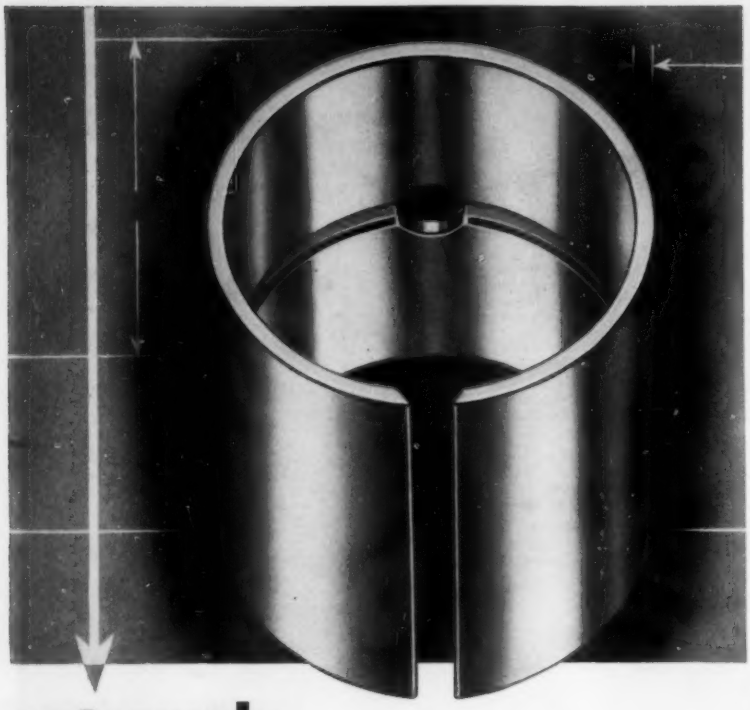
ALL GRADES OF SLAB ZINC
ZINC ANODES (Plating & Galvanic)
METALLIC CADMIUM
SULPHURIC ACID
LEAD-FREE and LEADED ZINC OXIDES
ZINC CARBONATE
GERMANIUM DIOXIDE
AGRICULTURAL LIMESTONE
CRUSHED STONE

American Zinc sales Company

Distributors for AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, Ohio • Chicago • St. Louis • New York • Detroit • Pittsburgh

For more information circle No. 7 on the Reader Service Card



extremely rigid specifications!

The illustration shows the cast bronze spindle bearing of a very well-known and popular metal-working lathe.

The manufacturer of this lathe has extremely rigid specifications covering tolerances, finish, structural quality of the bronze and roundness of the bearing even though the bearing is split for its entire length.

A manufacturer with such requirements naturally turns to Bunting to satisfy them.

For the unusual, as well as the usual, in bearings, bushings, bars or special parts of cast bronze or sintered metals, see Bunting first.

BUNTING SALES ENGINEERS in the field and a fully staffed Product Engineering Department are at your command without cost or obligation for research or aiding in specification of bearings or parts made of cast bronze or sintered metals for special or unusual applications.

...ask or write for your copy of...

Bunting's "Engineering Handbook on Powder Metallurgy" and Catalog No. 58 listing 2227 sizes of completely finished cast bronze and sintered oil-filled bronze bearings available from stock.

Bunting®

The Bunting Brass and Bronze Company • Toledo 1, Ohio • EVergreen 2-3451
Branches in Principal Cities

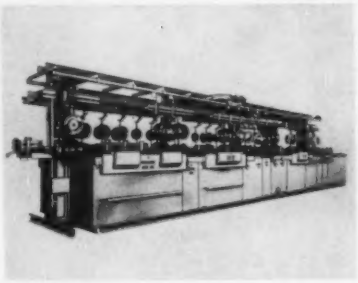
BEARINGS, BUSHINGS, BARS AND SPECIAL PARTS OF CAST BRONZE OR SINTERED METALS.

For more information circle No. 15 on the Reader Service Card

NEW PRODUCTS—

continued from page 82

PLATING MACHINE
. . . is high speed



Uniline is a new continuous uninterrupted high speed plating machine with a capacity of 120 racks per hour. The unit developed by THE MEAKER CO., will handle the complete operation from cleaning to nickel and chromium plating. This Single Row Machine is adaptable to a wide range of cycle and production requirements, including high lifts and wide narrow racks.

Circle No. 220 on Reader Service Card

DISPERSIONS
. . . are versatile

Dispersions of Teflon tetrafluoroethylene resins in a selection of binders with characteristics enabling application of the plastic to heat sensitive surfaces have been developed by ACHESON COLLOIDS CO.

Advantages include low coefficient of friction, flexibility, chemical inertness, less than 0.01 moisture absorption and excellent durability.

Circle No. 212 on Reader Service Card

TEMPERATURE MONITOR
. . . and control

The Pyrotrol is a non-contacting temperature monitor and control that performs well with induction heaters, crucibles, gas flame or torch, and furnaces. Developed by MASON INSTRUMENT CO., the unit operates at a distance, from 6" to many feet away. It can detect and react to moving heated objects and can be used for counting or initiating a process when the work passes a given point. Standard operating range is 950 F. to 2000 F. Accuracy is ½ of 1% of scale under normal operating conditions.

Circle No. 223 on Reader Service Card

continued on page 86

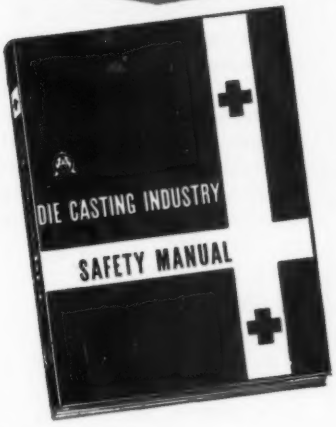
Look for these Marks of Responsibility in THE PMM ALPHABETICAL LISTING

FOR ECONOMY IN DIE CASTING

The **ADCI PRODUCT STANDARDS FOR DIE CASTINGS MANUAL** is designed to help product engineers to get the most from the die casting process.

The **ADCI DIE CASTING INDUSTRY SAFETY MANUAL** is designed to improve operating safety in die casting plants. These **MANUALS** are available from the address below at $5.00 each.

FOR SAFETY IN DIE CASTING



***A SINGLE ASTERISK**

MEMBER COMPANY OF THE AMERICAN DIE CASTING INSTITUTE

The national association of the custom die casting industry. The qualified ADCI members produce over 75% of the nation's annual volume of aluminum, magnesium, zinc and copper alloy die castings produced for sale.

****A DOUBLE ASTERISK**

A PARTICIPANT IN THE CERTIFIED ZINC ALLOY PLAN

The CZ Plan was developed by the American Die Casting Institute to permit you to select, with confidence, your supplier of zinc die castings. The CZ symbol is your assurance that the castings you buy will meet ADCI and ASTM standard specifications.

ANY ASTERISKS

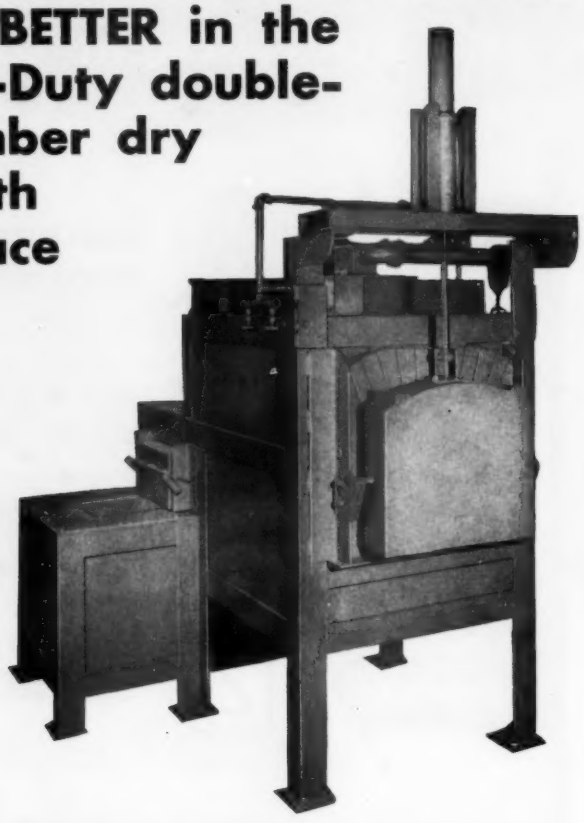
DIE CASTING RESEARCH FOUNDATION PARTICIPANT

A PARTICIPANT IN THE DIE CASTING RESEARCH FOUNDATION

These die casting suppliers have behind them the vast knowledge of improved die casting procedures being accumulated through the Die Casting Research Foundation.

AMERICAN DIE CASTING INSTITUTE 366 MADISON AVENUE, NEW YORK 17, N. Y.

Aluminum is melted FASTER and BETTER in the Hevi-Duty double-chamber dry hearth furnace



Separate Chambers Improve Uniformity, Increase Speed

Metal is melted on a sloping hearth and runs off into a separate holding chamber. Here it is held at a constant pouring temperature by thermocouple control. There is no danger of overheating and no cold metal enters the bath. This double-chamber design provides the best continuous production-line method for melting high-quality metals.

Direct Firing Boosts Quality and Efficiency

Moisture evaporates and is carried off during melting. All oxides are deposited on hearth surface, none are carried into the bath. Lack of need for bath agitation eliminates gas inclusions. Direct firing also saves fuel costs and provides more comfortable working temperatures around the furnace. See it at the metal show, Booth 241.

Write for Bulletin C-80 for complete details.

- Industrial Furnaces Electric or Fuel
- Dry Type Transformers
- Constant Current Regulators

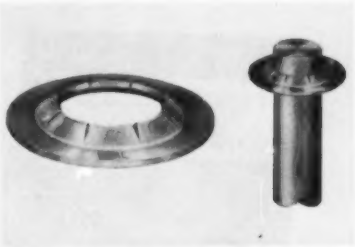
HEVI DUTY ELECTRIC CO.
Milwaukee 1, Wisconsin

For more information circle No. 57 on the Reader Service Card

NEW PRODUCTS—

continued from page 84

PLAIN ROD RETAINER
. . . is push type



Made of heavy-duty spring tempered steel, the Type U fastener, manufactured by THE PALNUT CO., will retain parts on plain round shafts, rods and axles. The fastener is applied by pushing on plain rod. It requires a 60 lb. push-on force, then provides removal resistance of 1,000 lbs. Diameter is ¾", overall height 0.085".
Circle No. 213 on Reader Service Card

BENCH PRESSES
. . . 6 and 8-ton

6-ton and 8-ton high speed hydraulic bench presses, for forming, trimming and force-fit assembly operations, have been introduced by HANNIFIN CO. Features are dual hand and adjustable down-stroke controls; electric push button control; and adjustable return stroke. Tonnage is adjustable from 10% of capacity to full, rated capacity.
Circle No. 219 on Reader Service Card

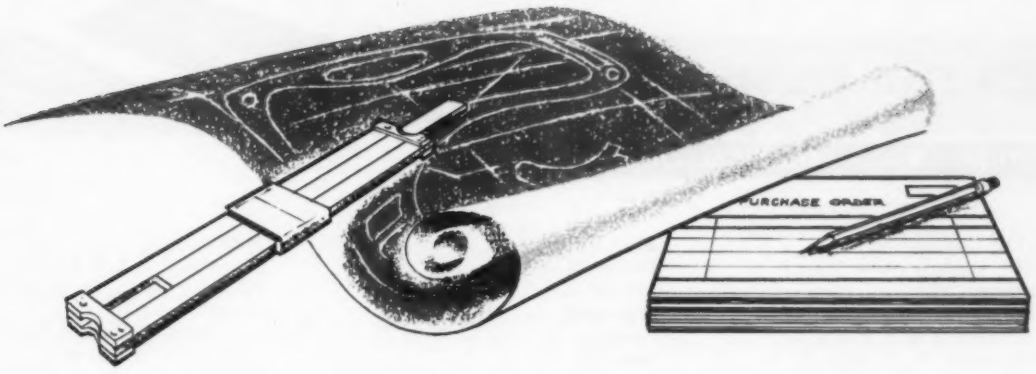
HAND SPRAY GUN
. . . for electrostatic spraying

Electrostatic spray painting with a hand-operated gun is now possible. Manufactured by RANSBURG ELECTRO-COATING CORP., the gun consists of a No. 2 Process atomizing bell which is incorporated into a lightweight hand unit. The gun is connected to a voltage pack by flexible cable.
Circle No. 209 on Reader Service Card

FURNACE
. . . reduces metal loss

A line of radiant-fired, tilting, reverberatory furnaces for aluminum melting has been developed by J. A. KOZMA CO. The furnaces are suited for use as common melting furnaces in die casting and permanent mold casting operations.
Circle No. 217 on Reader Service Card

continued on page 129



3rd Annual

Die Casting DIRECTORY

ABOUT THIS DIRECTORY:

Because there is a growing tendency to purchase "finished" castings we have greatly enlarged the scope of this year's die casting directory. Machining and surface finishing operations have been broken down finer than ever before. Whether or not a contract die caster will sub-contract any or all of these operations has been indicated. Also, we have added whether or not each company can or can not undertake assembly of components.

A new section of Tool and Die shops has been added. Only those companies who have had experience in the manufacture of die casting dies have been listed.

We hope that this directory will be useful.

KEY TO DIRECTORY LISTINGS:

A single asterick means membership in the American Die Casting Institute. A double asterick means a participant in the certified zinc plan.

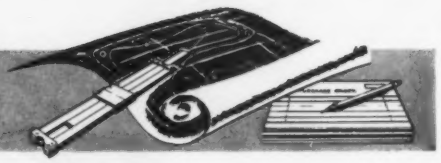
METALS – Letters indicate which metals will be cast. A–aluminum, B–brass, C–lead, D–magnesium, E–tin, F–zinc.

MACHINING – Numbers indicate the machining operations the company will do. An "s" after a number means this operation will be sub-contracted. 1–drilling & tapping, 2–turning, 3–facing, 4–milling, 5–broaching, 6–boring, 7–grinding.

FINISHING – Numbers indicate the surface finishing operations the company will do. An "s" after a number means this operation will be subcontracted. 1–abrasive belt sanding, 2–buffing & polishing, 3–plating, 4–painting, 5–chemical conversion coating, 6–barrel finishing, 7–vacuum coating.

TOOL & DIE SHOPS – The number 1 indicates die design service is available; 2 indicates die try-out equipment is available.

All information listed in this directory has been furnished by the individual companies. Extra copies of the directory are available at prices shown on page 4.



SECTION 1 ■ ALPHABETICAL LISTING

A. & A. Die Casting Co., Inc.* **
12901 South Western Ave.
Gardena, Calif.
Metals: A, C, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

A & E Tool & Gage Company
1202 Eddy Ave.
Rockford, Ill.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4
Assembly: yes

Aallied Die Casting & Mfg. Co., Inc.
10029 Pacific Ave.
Franklin Park, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 6s
Assembly: yes

ABCO Die Casting Corp.
330 No. Harding Ave.
Chicago 24, Ill.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 6, 6s
Assembly: yes

Ability Die Casting* **
865 N. Sangamon
Chicago 22, Ill.
Metals: A, C, F

Able Tool & Engineering Co.
865 N. Sangamon St.
Chicago 22, Ill.
Metals: A, C, F
Machining: 1, 2, 4, 7
Finishing: 1

Accessories Mfg. Co.
5075 14th St.
Detroit 8, Mich.
Metals: F

Accurate Die Casting Co.* **
3089 East 80th St.
Cleveland 4, Ohio
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6s, 7s
Assembly: yes

Acme Die Casting Co., Inc.
746 Albany
Dayton 8, Ohio
Metals: A

Acme Die Casting Corp.
8245 North Kimball Ave.
Skokie, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5
Finishing: 1, 6

Acme Die Casting Corp.
1635 Murray Ave.
Racine, Wisc.
Metals: A, F
Machining: 1, 2, 3, 4
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: yes

Acme Tool & Die Casting Co.
4250 East Washington Blvd.
Los Angeles 23, Calif.
Metals: A, C, D, F
Machining: 1, 1s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Acton-Hopkins Machine & Foundry Co.
2615 - 2nd Ave., N.
Birmingham, Ala.
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 3s, 4, 6
Assembly: yes

Adco Die Casting Co., Inc.
9555 Rush St.
El Monte, Calif.
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s

Adept Castings, Inc.
39 Hanse Ave.
Freeport, N. Y.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Adjel Products Co.
13561 Helen Ave.
Detroit 12, Mich.
Metals: F
Machining: 1
Finishing: 1, 2, 3, 4

Admiral Die Casting Co.
8313 East Ten Mile Rd.
Center Line, Mich.
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

Admiral Die Castings,
A Div., Portable Electric Tools, Inc.
250 West 83rd St.
Chicago 20, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6
Assembly: yes

Advanced Mfg., Inc.
1214 W. 254
Harbor City, Calif.
Metals: F

**Advance Pressure Castings, Inc.* **
20 Wythe Ave.
Brooklyn 11, New York
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Advance Tool & Die Casting Co.* **
3760 North Holton St.
Milwaukee 12, Wisc.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: yes

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
5959 West Howard
Chicago 31, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3s, 4s, 5, 5s, 6, 6s, 7s
Assembly: yes

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
12600 Berea Road
Cleveland 11, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3s, 4s, 5, 5s, 6, 6s, 7s
Assembly: yes

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
547 East Genesee St.
Fayetteville, New York
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7s
Assembly: yes

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
436 West Willard St.
Kalamazoo, Mich.
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 5, 5s 6, 6s, 7s
Assembly: yes

Ainsworth-Precision Castings Co.* **
Div. of Harsco Corp.
2025 Kishwaukee St.
Rockford, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3s, 4s, 5, 5s, 6, 6s, 7s
Assembly: yes

Ajax Die Casting & Mfg., Inc.
2002 East 6th
Tulsa 4, Okla.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6, 6s
Assembly: yes

for key see page 87

Akron Presform Mold Co., The
2038 Main
Cuyahoga Falls, Ohio
Metals: A

Albany Plating Co.
464 West 33rd St.
Chicago 16, Ill.
Metals: F
Machining: 1
Finishing: 1, 2, 3, 4, 5
Assembly: yes

Allen-Stevens Corp.* **
33-53 - 62nd St.
Woodside 77, New York
Metals: F
Machining: 1, 2, 3, 5,
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Allied Die-Casting Corp.
7080 N. W. 37 Ct.
Hialeah, Fla.
Metals: A, F
Machining: 1
Finishing: 1, 2, 4, 6

Allmetal Diecast Co.
1632 W. Midland Rd.
Auburn, Mich.
Metals: A, D
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 6
Assembly: yes

Alloy Die Casting Co.*
2211 Firestone Blvd.
Los Angeles 2, Calif.
Metals: A, B, F
Machining: 1, 2, 3, 4, 5, 6, 7, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

Almar Metal Arts
5 Water St.
Point Marion, Pa.
Metals: F
Machining: 7
Finishing: 1, 2, 3, 4

Alpha Industries
Die Casting Div.
1300 Wheatland Ave.
Logansport, Ind.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 6
Assembly: yes

Alumiloy Fabricators, Inc.
202 W. Bennett
Saline, Mich.
Metals: A

Aluminum Company of America*
Mannheim Rd. & Madison St.
Bellwood, Ill.
Metals: A, D
Machining: 1, 2, 3, 4, 7
Finishing: 1, 2, 6
Assembly: yes

Aluminum Company of America*
South Ave. & Center St.
Garwood, New Jersey
Metals: A, D
Machining: 1, 2, 3, 4, 7
Finishing: 1, 2, 6
Assembly: yes

Aluminum Company of Canada, Ltd., The
15 Brown's Line
Toronto 14, Ont., Can.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4s, 5s, 6
Assembly: yes

Aluminum Die Casting Co.*
3452-58 San Fernando Rd.
Los Angeles 65, Calif.
Metals: A
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

Aluminum Die Cast Foundries, Inc.
P.O. Box 69
Winchester, Ind.
Metals: A, D, E, F
Machining: 1, 2, 3s, 4s, 5, 6s, 7
Finishing: 1, 2, 5, 6

Ambrit Industries, Inc.* **
1288 Los Angeles St.
Glendale 4, Calif.
Metals: A, C, F
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6, 6s, 7s
Assembly: yes

American Aluminum Casting Co.*
324 Coit St.
Irvington 11, N. J.
Metals: A
Machining: 1

American Casting & Mfg. Corp.
30 Main St.
Brooklyn, N. Y.
Metals: C

American Die Casting Co.
850 Pannell Street, N.W.
Grand Rapids 4, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5
Finishing: 1, 2, 3, 4
Assembly: yes

American Flange & Mfg. Co., Inc.
825 South Kilpatrick Ave.
Chicago 44, Ill.
Metals: F
Machining: 1, 4, 5, 7
Finishing: 3
Assembly: yes

American Hardware Corp.
Kwikset Locks Div.
516 E. Santa Ana
Anaheim, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

Amerock Corp.
4000 Auburn St.
Rockford, Ill.
Metals: F
Machining: 1, 2, 3, 4
Finishing: 1, 2, 3, 3s, 4, 6
Assembly: yes

Amplex Engineering Co., Inc.
2510 Grand Ave.
New Castle, Ind.
Metals: C
Finishing: 1, 4

Anderson Die Casting & Engineering Co.* **
1000 East 60th St.
Los Angeles 1, Calif.
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5, 6, 6s, 7s
Assembly: yes

Joe Anderson Die Casting Co.
2600 South Delaware
Denver 23, Colorado
Metals: F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 4, 6
Assembly: yes

Anderson Tool & Mfg. Co.
3450 N. Kostner Ave.
Chicago 41, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2s, 3s, 4s, 6s
Assembly: yes

Arkansas Die Casting Co.
P. O. Box 26
Harrison, Ark.
Metals: A, F
Machining: 1
Finishing: 1, 3s, 4, 5, 6
Assembly: yes

Arlington Industries, Inc.
2 Dockash Place
Scranton 3, Pa.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 6

Arrow Acme Corp.
Box 278
Webster City, Iowa
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s

Arrow Aluminum Castings Co.
3135 Berea Road
Cleveland 11, Ohio
Metals: A
Machining: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

Art Jack Die Casters, Inc.
196 Murray Street
Newark 5, New Jersey
Metals: F
Machining: 1, 1s
Finishing: 2s, 3s, 4s, 6s

Arvada Aluminum Foundry
5015 Garrison St.
Arvada, Colo.
Metals: A
Machining: 1, 1s, 2, 2s, 3, 3s

Atherton Tool, Die and Mold
1614 South Sycamore St.
Santa Ana, Calif.
Metals: F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

Atlantic Die Casting Co.
17740 Clarann
Melvindale, Mich.
Metals: A

Atlas Auto Products, Inc.
5815 Wilmington Ave.
Los Angeles 1, Calif.
Metals: F

for key see page 87

Atlas Die Casting Co.* **
362 N. Kelly St.
Germantown, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 6
Finishing: 1, 5

Atomic Die Casting Corp.
7817 South Claremont Ave.
Chicago 20, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 4s, 5, 5s, 6
Assembly: yes

Auel Industries
Herminie, Pa.
Metals: F

Aurora Metal Co.
614 West Park Ave.
Aurora, Ill.
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2s, 3s,

Automotive Accessory Co., Ltd.
1551 Erin St.
Winnipeg, Man., Can.
Metals: F

Badger Die Casting Corp.* **
201 West Oklahoma Ave.
Milwaukee 7, Wisc.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Banner Metal Products, Ltd.
1680 Kildare Road
Windsor, Ont., Canada
Metals: F
Machining: 1
Assembly: yes

Banthrico Industries, Inc.
17 North Desplaines St.
Chicago 6, Ill.
Metals: F
Machining: 1, 2, 3s, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: yes

Barber Die Casting Co., Ltd.
Box 240, Postal Station "B"
Hamilton, Ontario, Can.
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6s, 7s
Assembly: yes

Barrington Tool & Engineering Co.
335 E. Station
Barrington, Ill.
Metals: F

Basic Aluminum Casting Co.
1325 East 168th St.
Cleveland 10, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 6
Assembly: yes

Beaut Manufacturing Co.
7500 Tonnelle Avenue
North Bergen, New Jersey
Metals: C, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

Belden Mfg. Company
Richmond, Indiana
Metals: C

Benda Tool & Model Works
1444 - 4th Street
Berkeley 10, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 7
Finishing: 1
Assembly: yes

Bendix Foundries

Bendix Aviation Corp.
Teterboro, New Jersey
Metals: A, D
Machining: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s

Eclipse Machine Division
Bendix Aviation Corp.
Oakwood Ave.
Elmira Heights, New York
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2, 2s, 3, 3s, 6, 6s
Assembly: yes

Benton Harbor Malleable Industries, Inc.
171 Graham Ave.
Benton Harbor, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: yes

Blaking Company
921 North East Main St.
Minneapolis 13, Minn.
Metals: F
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7, 7s
Finishing: 1, 1s, 2, 2s, 4, 4s, 6, 6s
Assembly: yes

Blue Ridge Pressure Castings, Inc.* **
Bridge Street
Lehighton, Pa.
Metals: A, B, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s

Bolam Copper Co.
2801 Jefferson St.
Tampa 2, Florida
Metals: A, B, C
Machining: 1, 2, 3, 4, 6, 7
Finishing: 2, 3, 4, 5s, 6s, 7s
Assembly: yes

Bowersox Precision Castings, Inc.
3523 W. Ninth St.
Chester, Pa.
Metals: A, F
Machining: 1
Finishing: 1, 6

Bradford Tool & Die Co.
15 Bradford Place
Brockton, Mass.
Metals: A, F
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 6, 6s, 7, 7s
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Chas. D. Briddell, Inc.
Crisfield, Md.
Metals: F

Brillcast, Inc.
2544 Thornwood, S.W.
Grand Rapids 9, Mich.
Metals: A, F

Bruce Mfg. & Molding Co., Inc.
Atwater St.
Plantsville, Conn.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: yes

Bruin Mfg. Co.
607 North 4th Ave.
Marshalltown, Iowa
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 2, 3s, 4, 5s, 6
Assembly: yes

Bucy Die Casting Corp.
625 South Glenwood Pl.
Burbank, Calif.
Metals: A, B, D, F

Buehrle Engineering Co.
856 East Broadway
Muskegon, Michigan
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

Burton Die Casting Co.
G-6427 Davison Road
Davison, Michigan
Metals: F
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 2, 2s

Bush Die Casting & Engineering
6 Dravus Street
Seattle 9, Wash.
Metals: F
Machining: 1, 7

Caldwell Casting Co., Inc.
Market Street
Cambridge, Maryland
Metals: A, F
Machining: 1
Finishing: 1, 2s, 3s, 4s, 5, 5s, 6s
Assembly: yes

Calko Die Casting Co.
43 Sunnyside Ave.
P. O. Box 552
Stamford, Conn.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4s, 5, 6, 7s
Assembly: yes

Callen Mfg. Corp.* **
1425 North First Ave.
Maywood, Ill.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Cambridge Tool & Mfg. Co., Inc.
63 Gorham St.
Somerville 44, Mass.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: yes

Camp Aircraft Parts, Inc.
1133-1139 McCarter Hwy.
Newark 2, New Jersey

for key see page 87

Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Campbell & Cox Mfg. Co.
122 North Pomona Ave.
P.O. Box 37, Brea, Calif.
Metals: A, C

John J. Carey Co.
2194-96 Bridge St.
Philadelphia 24, Pa.
Metals: F

Carpenter Die Casting Co., Ltd.
474 Burlington St., E.
Hamilton, Ont., Canada
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Casper's Machine Shop
1047 77th Ave.
Oakland, Calif.
Metals: F

Cast-O-Matic Corp.* **
Wavel St.
East Syracuse, New York
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6
Assembly: yes

Central Casting Co.
400-416 Trumbull
Elizabeth, N. J.
Metals: A, F

Central Die Casting & Mfg. Co., Inc.* **
2935 West 47th St.
Chicago 17, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 2, 3s, 4, 6
Assembly: yes

Central Pattern Co.
134-36 So. Front St.
Quincy, Ill.
Metals: A, F

Century Die Casting Co.*
2629 West Fletcher St.
Chicago 18, Ill.
Metals: A, F
Machining: 1
Finishing: 1, 6

Challenger Lock Co., Inc.
4865 Exposition Blvd.
Los Angeles 16, Calif.
Metals: A, F
Machining: 1, 1s, 3, 3s, 4, 4s
Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 6, 6s
Assembly: yes

W. L. Chapman Co., Inc.
2886 East Walnut St.
Pasadena 8, Calif.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 6

Char-Lynn Co.*
2843 - 26th Ave., S.
Minneapolis 6, Minn.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: yes

Chautauqua Hardware Corp.
31 Water St.
Jamestown, New York
Metals: A, B, C, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: yes

Chicago Die Casting Mfg. Co.
2510 West Monroe St.
Chicago 12, Ill.
Metals: F
Machining: 1, 5, 7
Finishing: 2s, 3s, 4, 5s, 6
Assembly: yes

Chicago Expansion Bolt Co.
1338 West Concord Pl.
Chicago 22, Ill.
Metals: C
Machining: 1
Assembly: yes

Chicago White Metal Casting, Inc.* **
5239 West Grand Ave.
Chicago 39, Ill.
Metals: A, F
Machining: 1, 2s, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s
Representatives: *Chicago 51, Ill.*, F. Kruchten, 5239 W. Grand; Gregory & Keane, 7101 S. Stoney; *Shaker Hts. 20, Ohio*, Gordon, 2525 Kemper Rd.; Levinson, 5239 W. Grand; *Indianapolis 18, Ind.*, Oshry, 3728 Manor Ct.; *Lyndhurst 24, Ohio*, L. Doptis, 1496 Brainard.

Chrysler Corporation, Forge & Foundry Div.
7700 Russell St.
Detroit 12, Mich.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7
Assembly: yes

Cincinnati Die Casting Co., The* **
2117 Spring Grove Ave.
Cincinnati 14, Ohio
Metals: A, B, F

Cleveland Castings, Inc.
1830 East 63rd St.
Cleveland 3, Ohio
Metals: A, C, D, E, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7s

Clinton Engines Corp.
Franklin St.
Clinton, Michigan
Metals: A, D, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 4, 6
Assembly: yes

Clyde Equipment Co.
3405 South Spring Ave.
St. Louis 16, Mo.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Assembly: yes

Coast Die Casting Co.*
5752 Joanne Place
Culver City, Calif.
Metals: A, F
Machining: 1, 2, 3, 4
Finishing: 1, 2s, 3s, 4s, 6s

Colbert Die Cast Co., Inc.
10107 Adella Ave.
South Gate, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: yes

Columbia Metal Products Inc.
Box 544
Columbia, Tenn.
Metals: A

Comet Metal Products, Inc.
91-01 - 132 St.
Richmond Hill 18, New York
Metals: C, E, F
Machining: 1,
Finishing: 1, 2, 3s, 4, 6s, 7s

Conetta Tool & Die Co., Inc.
73 Sunnyside Ave.
Stamford, Conn.
Metals: F

Congdon Die Casting Co.
1266 Godfrey Ave., S.W.
Grand Rapids, Mich.
Metals: F

Conneaut Die Casting* **
618 Sandusky St.
Conneaut, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 6
Assembly: yes

Consolidated Die Cast Corp. of America
M-40 North
Dowagiac, Michigan
Metals: A, F
Machining: 1, 2, 3, 4
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7, 7s
Assembly: yes

Continental Die Casting Corp.* **
9615 Grinnell Avenue
Detroit 13, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5, 6s, 7s
Finishing: 1, 2, 3, 4
Assembly: yes

Continental Metallifacture Co.
414 Pine St.
Scranton, Pa.
Metals: A, F
Machining: 1, 2, 3, 4, 6s, 7s
Finishing: 1, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Cordray Die Casting Co.
6565 S. Wilson St.
Los Angeles 1, Calif.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s

Robert A. Cox Die Casting Co.
11418 Knightsbridge Ave.
Culver City, Calif.
Metals: A

for key see page 87

Craft Die Casting Corp.
1308 N. Halsted St.
Chicago 22, Ill.
Metals: A, B, C, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 6
Assembly: yes

Crown City Die Casting Co.
84 N. Fulton Ave.
Pasadena 8, Calif.
Metals: A, F

Dallas Die Casting Co.
316 Rock Island
Dallas 17, Texas
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: yes

Danacor Co.
430 Carroll
Brooklyn 15, N. Y.
Metals: F

Darmon Tool & Mfg. Corp.
2664 Park Ave.
New York, N. Y.
Metals: F

Davis Products Corp.
601 - 39th St.
Brooklyn 32, N. Y.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5s, 6, 6s, 7, 7s
Assembly: yes

Dayton Die Casting Co.
111 Front St.
Dayton 2, Ohio
Metals: A, C, F
Machining: 1
Finishing: 1
Assembly: yes

DeCardy Bros. Co.* **
1806 N. Keeler Ave.
Chicago 39, Ill.
Metals: C, F

De Laval Separator Co.
25 Columbia St.
Poughkeepsie, New York
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: yes

Delta Die Casting Corp.*
9393 W. Seymour Ave.
Schiller Park, Ill.
Metals: A

A. J. DeMoude Co., P.O. Box 392
691 South Erickson
Beaverton, Oregon
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: yes

Denham Mfg. Co.
Pere Marquette St.
Big Rapids, Mich.
Metals: F

DeRoy Mfg. Co.
9208 Atlantic Ave.
South Gate, Calif.
Metals: F

Detroit Die Casting Corp.* **
597 Beaufait St.
Detroit 7, Mich.
Metals: F
Machining: 1, 2, 4, 7
Finishing: 1, 2, 3, 4, 4s, 5, 6, 6s
Assembly: yes

Detroit Ice Machine Co.
2615 Twelfth St.
Detroit 16, Mich.
Metals: A
Machining: 1, 2, 3, 7
Finishing: 1s, 2, 3s, 4, 5s, 6s, 7s
Assembly: yes

Dialoy, Inc.
214 South Clinton St.
Chicago 6, Ill.
Metals: A, F
Machining: 1, 2, 4

Di-Cast Mfg. Co.
Bradford Place
Brockton, Mass.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Die Cast Products, Inc.* **
621 West Rosecrans Ave.
Gardena, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: Yes

Die Cast Products, Inc.
4040 Hough Ave.
Cleveland 3, Ohio
Metals: A, C, F
Machining: 1, 2s, 3s, 4s, 5, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Die Casters Co.
8640 S. Broadway
Wichita 15, Kans.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Die Casting Corp. of Florida
3000 N. W. 75
Miami 47, Fla.
Metals: A, F

Diecasters, Inc.
90 Herbert Ave.
Closter, New Jersey
Metals: A, B, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5, 6s
Assembly: yes

Dieco Die Casting Co.
59-27 Decatur St.
Brooklyn 27, N. Y.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 6
Assembly: yes

J. E. Dietz Mfg. Co.
9216 East Bermudez St.
Pico Rivera, Calif.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 6s
Assembly: yes

Dixie Die Cast Co.
741 South West End Ave.
Detroit 17, Mich.
Metals: F
Machining: 1, 2s, 3s, 4, 5s, 6s, 7
Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

Dixie Die Casting Corp.
Box 1208
Reidsville, N. C.
Metals: A

Dollin Corp.* **
600 South 21st St.
Irvington 11, New Jersey
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 6s, 7s
Assembly: yes
Representatives: *Denville, New Jersey*, E. R. Broderick, 140 Rainbow Trail Rainbow Lakes; *Canton 3, Ohio*, A. H. Dervin, 217-18th St., N. W.; *Mamaroneck, N. Y.*, Philip Dollin, 151 Fenimore Rd.; *Flushing 58, L.I., N.Y.*, T. R. Foley, 32-32 - 161st St.; *Detroit 35, Mich.*, The Fralick Co., 18040 James Couzens Highway; *Louisville 7, Ky.*, Marvin C. Greer, P. O. Box 181; *St. Paul 4, Minn.*, A. A. Gustafson, 161 Griggs Midway Bldg. University at Fairview; *Chicago 26; Ill.*, Hember and Assoc., 1554 Howard St.; *Boston 10, Mass.*, B. F. Jaques, 67 Batterymarch St.; *Buffalo, N. Y.*, R. C. Kleindinst, P.O. Box 18; *Memphis, Tenn.*, Jack Raines, c/o L. E. Offutt Co., Inc., P. O. Box 8063; *Glenside, Pa.*, John M. Sullivan, 732 Hillcrest Ave.; *Greensboro, N. C.*, Clarence S. Woods, P. O. Box 293.

Dominion Die Casting, Ltd.
Libby Street
Wallaceburg, Ont., Canada
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6s, 7s
Assembly: yes

Dormeyer Corp.
Precision Parts Div.,
4912 West Grand Ave.
Chicago 39, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6s, 7s
Finishing: 1, 2,

Douglas Company, The
620 - 12th Avenue, S.
Minneapolis 4, Minn.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6s, 7s

Dow Chemical Co.*
Magnesium Die Casting
Midland, Mich.
Metals: A, D
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7, 7s
Finishing: 1, 2, 3, 4, 5, 6

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Dowst Mfg. Co.
600 North Pulaski Rd.
Chicago 24, Ill.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 4, 6
Assembly: yes

Druge Bros. Mfg. Co.
888 - 92nd Ave.
Oakland 5, Calif.
Metals: A, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

Du All Die Casting Co.
2940 Denby Ave.
Los Angeles 39, Calif.
Metals: A, D, F
Machining: 1
Finishing: 1, 2

Duane Specialties, Ltd.
209 Parkhurst St.
Newark 5, New Jersey
Metals: F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1s, 7s
Assembly: yes

Du Page Die Casting & Fabricating Co., Inc.
8049 North Ridgeway Ave.
Skokie, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Du-Wel Metal Products, Inc.* **
Post Office Box 307
Bangor, Mich.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6s, 7s
Assembly: yes

Dynamic Die Casting Co.
510 West 10 Mile Rd.
Madison Heights, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: yes

E. B. Metal Products Co., Inc.
12-12 Bridge Plaza S.
Long Island City 1, N. Y.
Metals: F
Machining: 1
Finishing: 1, 2, 3s, 4, 5s
Assembly: yes

Eastern Malleable Iron Co.
Eastern Casting Corp. Div.
64 South William St.
Newburgh, New York
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: yes
Representatives: *Newburgh, N. Y.*, W. M. Adams, E. D. Word, Eastern Casting Corp., 64 South William St.; *Union, N. J.*, Talbot Associates, 1865 Morris Ave.; *Rochester, N. Y.*, Comerford & Morton, 197 Dalkeith Rd.

Eastern Metal Products Corp.
Tuckahoe, N. Y.
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6s, 7s
Assembly: yes

R. H. Eggers Co.
4701 Perkins Ave.
Cleveland 3, Ohio
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Ehrhart Die Casting Co.
K.O.K. Road
Hamilton, Ill.
Metals: F
Machining: 1, 2, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: yes

Eklind Tool & Mfg. Co.
2627 N. Western
Chicago 47, Ill.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

El Cajon Die Casting & Mfg. Co.
590 Marshall Ave.
El Cajon, Calif.
Metals: F
Machining: 1s, 2s, 3s, 4s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 6
Assembly: yes

Electric Auto-Lite Co., The
Lamp Div.
Cincinnati 15, Ohio
Metals: A, B, F

Electric Auto-Lite Co., The
Woodstock Div.
501 Clay St.
Woodstock, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6

Electroline Mfg. Co., Ltd.
1305 Windsor Ave.
Windsor, Ont., Can.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 3s, 5s, 6, 7s
Assembly: yes

El Monte Tool & Die Casting, Inc.* **
2425 North Tyler Ave.
El Monte, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1
Assembly: yes

Empire Die Casting Co.
19800 Miles Ave.
Cleveland 28, Ohio
Metals: A, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s

Engineering Cast Products
17601 Swift Ave.
Detroit 3, Mich.
Metals: A, B, F
Finishing: 1

Engineers Tool & Mfg. Co., Inc.* **
7 Island Brook Ave.
Bridgeport 6, Conn.
Metals: F

Ertl Company
2475 Ertl Lane
Dubuque, Iowa
Metals: A, F
Machining: 1, 2s, 3s, 4s, 6s, 7, 7s
Finishing: 1, 1s, 2, 4, 5s, 6, 7s
Assembly: yes

Exact Tool & Die Co.
5829 Tireman Ave.
Detroit 4, Mich.
Metals: A

Excel Products Co., Inc.
Codwise Ave. & Elizabeth St.
New Brunswick, N. J.
Metals: F

Falconer Metal Specialties, Co., Inc.* **
Winchester Rd.
Lakewood, New York
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5, 6, 7s
Assembly: yes

Fall River Tool & Die Co.
4 Walker St.
Fall River, Mass.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Fanarc Mfg. Co., Inc.*
1115 W. Whittier Blvd.
Whittier, Calif.
Metals: A, F

Federal Die Casting Co.* **
2222 Elston Ave.
Chicago 14, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 4, 6
Representatives: *Chicago 14, Ill.*, Otto Herbert, Federal Die Casting Co., 2222 Elston Ave.

Finkel Umbrella Frame Co., Inc.
200 Brush Ave.
Bronx 65, N. Y.
Metals: F

Fisk Products Inc.
207 N. Main St.
Berrien Springs, Mich.
Metals: F

Form-A Die Casting Corp.
100 Felton St.
Waltham 54, Mass.
Metals: A, F
Finishing: 1, 2s, 3s, 6s

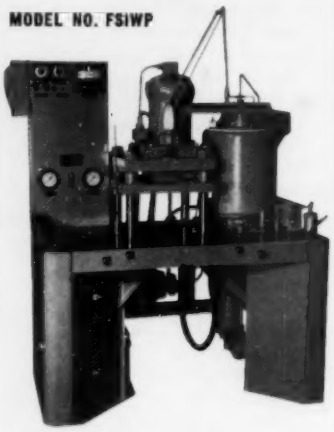
Forster-Appelt Mfg. Co., Inc.
82 East Lanark Ave.
Lanark, Ill.
Metals: A, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 5s, 6s
Assembly: yes

Fort Die Casting Corp.
2409 Wills St.
Marysville, Mich.
Metals: A, C, F
Machining: 1, 2, 3, 4, 4s, 5, 5s, 6, 6s, 7, 7s

for key see page 87

LEYDEN
WAX INJECTORS
3 OF OUR MOST POPULAR MODELS

MODEL NO. FSIWP



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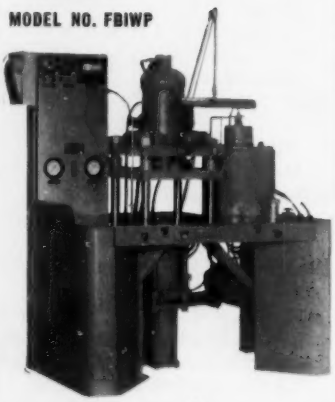

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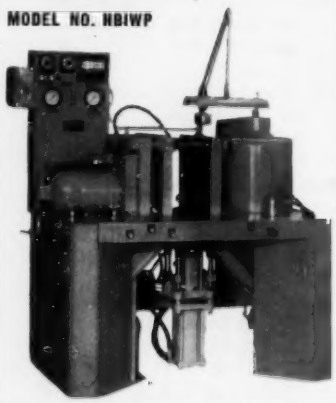


For complete details see the September, October and November issues of Precision Metal Molding or write Mfgr.

Any Type or Size Unit Built to Your Specifications.

LEYDEN HYDRAULICS, INC.

1800 North River Rd. • Melrose Park, Ill.

Circle No. 63 on the Reader Service Card

Finishing: 1, 2, 2s, 3s, 4, 5, 6s, 7s

Fort Recovery Industries, Inc.
Fort Recovery, Ohio
Metals: A, F
Machining: 1
Finishing: 1, 2s, 3s, 5

Fort Worth Die Casting Co., Inc.
1213 E. Daggett
Ft. Worth, Texas
Metals: A, F

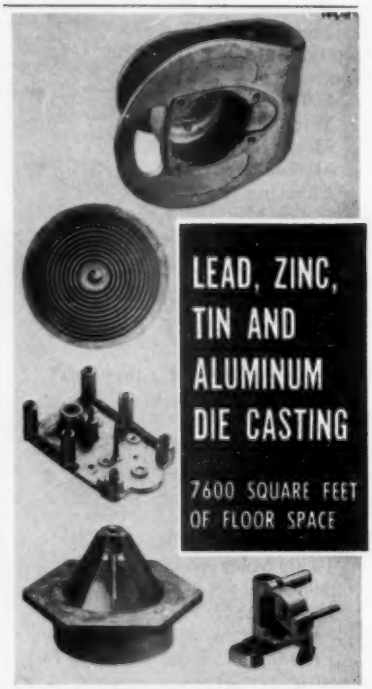
Frantz Mfg. Co.
1200 Camden Ave., S.W.
Canton 6, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 5, 5s
Assembly: yes

Future Products Co.
3625 N. Mississippi Ave.
Portland 17, Ore.
Metals: F
Machining: 1, 2s, 3s, 4, 5s, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Gasket, Packing & Specialty Co., Inc.
41 N. Saxon Ave.
Bay Shore, N. Y.
Metals: C, E

Gemco Mfg. Co., Inc.
501 South Lipan St.
Denver 23, Colo.
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7s

for key see page 87



SYRACUSE
DIE CASTING & MFG. CO.

2101 Teall Ave. • East Syracuse, N. Y.

HOward 3-6482

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Will your new products stand the sales test?

Many products using Monarch Exploratory-Engineered Castings are among the nation's sales leaders. Today's competitive markets demand new features.

This is another area where Monarch gives valuable assistance to customers. Monarch Exploratory-Engineering has created many sales-sparking casting performances and eye-catching finishes. Write today. We will be happy to show you specifics.

Engineered-for-sales aluminum permanent mold castings, aluminum and zinc die-castings.

MANUFACTURING in MOLTEN ACHIEVEMENTS ALUMINUM

MONARCH ALUMINUM MFG. COMPANY

9205 Detroit Avenue Cleveland 2, Ohio

Circle No. 72 on the Reader Service Card

Finishing: 1, 6, 7s
Assembly: yes

General Cast Products, Inc.
2211 Waverly St.
Pittsburgh 18, Pa.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: yes

General Die Casters, Inc.
Peninsula, Ohio
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

General Die Casting Co.
1956 Burdette St.
Ferndale 20, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 3, 4, 5, 6s, 7s
Assembly: yes

General Electroplating Co.
601 Russell Ave.
Indianapolis 25, Ind.
Metals: F

General Motors Corp.
AC Spark Plug Div.
1300 N. Dort Hwy.
Flint 2, Mich.
Metals: A, D, F

General Motors Corp.
Fabricast Div.
P. O. Box 211
Malvern, Ark.
Metals: A

General Motors Corp.
Brown-Lipe-Chapin Div.
Town Line Road
Syracuse, New York
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

General Motors Corp.
Fabricast Div.
P. O. Box 271
Bedford, Ind.
Metals: A

Gibbs Automatic Div.,
Rupert Die Casting Co.
1106 5th St.
Henderson, Ky.
Metals: A, F

Glynn-Johnson Corp.
4422 N. Ravenswood Ave.
Chicago 40, Ill.
Metals: A
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 4, 6
Assembly: yes

Gordon Mfg. Co. Ltd.
1390 Wallace
Wallaceburg, Ont., Can.
Metals: A

Gorton & MacIntyre
55 S. 3rd Ave.
Mt. Vernon, N. Y.
Metals: F
Machining: 1s, 2s, 3s, 4s, 5s, 6s, 7s

for key see page 87

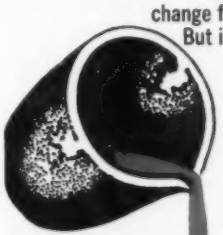
BOY! was my face RED!

I'd always used crucible furnaces in my shop, until a few years ago. Then, I switched.

But not for long!
I'm back to
crucible furnaces again.
Why? two counts:
Cost, and **flexibility.**

Know what I found? My crucible cost, per pound of metal melted is **no higher** today than it was in 1940! Sure, crucibles cost a little more today, but I get more heats. I checked my old records, and per pound of metal melted my **crucible costs are the same!** And another thing — **flexibility.** On a lot of these non-crucible furnaces, try and change from one metal to another without contamination! But in my crucible furnaces, I just change from one crucible to another, fast, simple, and trouble free!

From now on, its **crucible melting** for me!



These manufacturers are ready to assist you with melting and pouring problems, foundry layouts and crucible furnace servicing.

ROSS-TACONY CRUCIBLE CO.
VESUVIUS CRUCIBLE COMPANY
AMERICAN REFRACTORIES & CRUCIBLE CORPORATION
JOSEPH DIXON CRUCIBLE CO.
ELECTRO REFRACTORIES & ABRASIVES COMPANY
LAVA CRUCIBLE-REFRACTORIES COMPANY

Crucible Manufacturers' Association

CRUCIBLE MANUFACTURERS ASSN.
20 West 43rd St., N. Y. 36, N. Y.

☐ Send "Crucible Charlie" Brochure #3 "Furnace Maintenance".
☐ Send "Crucible Charlie" Brochure #4 "Proper Fitting Hardware".

NAME.....
POSITION.....COMPANY.....
ADDRESS.....
CITY.....STATE.....

For more information circle No. 31 on the Reader Service Card

Finishing: 1s, 2s, 3s, 4s, 5s, 6s, 7s

Grand Die Casting, Inc.*
7936 West Grant Ave.
Elmwood Park, Ill.
Metals: A, F
Machining: 1, 2s, 3, 4, 5, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s

Grand Rapids Brass Co.
420 - 50th St., S.W.
Grand Rapids, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

Grand Rapids Die Casting Co.
2125 Turner Road, N.W.
Grand Rapids 4, Mich.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6s, 7
Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6s, 7s
Assembly: yes

Grand Steel & Mfg. Co.
1400 West 14 Mile Rd.
Clawson, Mich.
Metals: A, F
Machining: 1, 6
Finishing: 1, 2, 3, 4, 6
Assembly: yes

C. M. Grey Industries, Inc.* **
358 Central Ave.
East Orange, New Jersey
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s

**Gries Reproducer Corp.* **
140 Beechwood Ave.
New Rochelle, New York**
Metals: F
Machining: 1, 4, 5,
Finishing: 2s, 3, 4s, 5, 6, 7s
Assembly: yes
Representatives: *Chicago 45, Ill.*, Jay C. Angel & Co., 2743 W. Peterson Ave.; *Milwaukee 3, Wis.*, C. W. Binzel, 808 N. Third St.; *Excelsior, Minn.*, A. R. Compton, P. O. Box 425; *Webster Groves 10, Missouri*, Components & Equipment Co., 501 Clark Ave.; *Shaker Heights, Ohio*, Harry F. Davis & Sons, 3262 Warrington Rd.; *Los Angeles, Calif.*, Heim & Scheer, 11168 Santa Monica Blvd.; *Cincinnati 37, Ohio*, McLaughlin & Welland, Inc., P. O. Box 2544, 7540 Reading Rd.; *Jenkintown, Pa.*, Riley & Aleshire, 615 Greenwood Ave.; *Lansing 4, Michigan*, Warren G. Snyder, P.O. Box 1077, 914 Michigan Nat'l. Tower; *Atlanta 6, Ga.*, Seaco Assoc., 1503 North Amanda, N.E.; *Buffalo 7, N. Y.*, Stetler & Stetler, 1807 Elmwood Ave.

H. & S. Metal Products Co.
4159 Whiteside St.
Los Angeles 63, Calif.
Metals: A, D
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 5

Hadlock & Temte, Inc.
Box 405
Winfield, Ill.
Metals: F
Machining: 1, 4,
Finishing: 1, 2s, 3s, 4s, 6s
Assembly: yes

Halex Die Casting Co.
8640 Bessemer Ave.
Cleveland 27, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 6
Assembly: yes

Joseph Hall Company
2121 West Clearfield St.
Philadelphia 32, Penna.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 6,
Assembly: yes

C. M. Hall Lamp Co.
1035 E. Hancock Ave.
Detroit 7, Mich.
Metals: F

Hall Level & Manufacturing Works
P. O. Box 1101
Austin, Texas
Metals: A, C, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 4,
Assembly: yes

Hamilton Die Cast, Inc.*
240 North "B" St.
Hamilton, Ohio
Metals: A, F
Machining: 1, 2s, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7, 7s
Assembly: yes

Hamilton Diecasting Corp.*
2020 Jericho Turnpike
New Hyde Park, N. Y.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7s

Hamilton Machine Shop
7829 Hamilton Ave.
Pittsburgh 21, Penna.
Metals: C, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 4s, 5s, 6, 7s
Assembly: yes

Hamlin Products, Inc.
P. O. Box 2016
7600 Asher Avenue,
Little Rock, Ark.
Metals: A
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 6
Assembly: yes

**Hampden Brass & Aluminum Co.
262 Liberty St.
Springfield 1, Mass.**
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 6
Assembly: yes
Representatives: *Springfield, Mass.*, Hampden Brass & Aluminum Co., 262 Liberty St.

Harbot Die Casting Corp.*
52 East Centre St.
Nutley 10, N. J.
Metals: A
Machining: 1
Finishing: 1

Hardy Manufacturing Corp.
1225 West Pearl St.
Union City, Ind.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

Hartzell Manufacturing, Inc.* **
2516 Wabash Ave.
St. Paul 14, Minn.
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7
Assembly: yes

Harvey Aluminum
19200 South Western Ave.
Torrance, California
Metals: A

Harvill Corp.* **
6251 West Century Blvd.
Los Angeles 45, Calif.
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 1s, 2, 2s, 3s, 4s, 5s, 6, 6s, 7s

H. L. Harvill Manufacturing Co.
12890 Magnolia Ave.
Arlington, Calif.
Metals: A, B, C, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Hayden Manufacturing Co.
618 Hartrey
Evanston, Ill.
Metals: F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 4, 6

Haug Die Casting Corp.
52 Brown Ave.
Springfield, N. J.
Metals: F

Heick Die Casting Corp.* **
6550 West Diversey Ave.
Chicago 35, Ill.
Metals: A, F
Machining: 1, 3, 4, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6

Helfrich Die Casting Co.
207 Schneider Road
North Canton, Ohio
Metals: F
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1
Assembly: yes

Helm Accessories, Inc.
9818 Grinnell
Detroit 13, Mich.
Metals: A, F
Machining: 1, 2, 3,4,5,6,7
Finishing: 1, 2s, 3s, 4s
Assembly:yes

Hermel Die Casting Corp.
P. O. Box 155
Eau Claire, Mich.
Metals: A, F

for key see page 87

Hilfinger Corp.* **
1800 Westwood Ave.
Toledo 7, Ohio
Metals: F

Holland Die Casting Co., Inc.
582 Gordon
Holland, Mich.
Metals: F

Holmes White Metals Co.
Holmes, Iowa
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 6
Assembly: yes

Hooper Die Casting Co.
300 Maple Ave.
Trenton 8, N. J.
Metals: C, E, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3s, 4, 5s, 6, 7s

Hoover Co., The* **
Die Casting Div.
North Canton 20, Ohio
Metals: A, F
Machining: 1, 2, 3, 4
Finishing: 1, 2, 6
Representatives: *Royal Oak., Mich.*, E. M. Hovey, 4346 N. Woodward.

Hoover Company, Limited, The
Commercial Die Cast Division
Hamilton, Ontario, Canada
Metals: A
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7, 7s
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

Hoover Ball & Bearing Co.
Universal Die Casting Div.
Saline, Mich.

Hoover Ball & Bearing Co.
Utilex Div.
Fowlerville, Mich.

Hoover Ball & Bearing Co.
Glenvale Products Div.
Malvern, Ark.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 5, 6
Assembly: yes

Hoover Ball & Bearing Co.
Adrian Div.
Adrian, Mich.
Metals: A, F
Finishing: 3, 4
Assembly: yes

Hudson Valley Aluminum Co., Inc.
Box 506
Newburgh, N. Y.
Metals: A

R. W. Hughes Industries, Inc.
2713 Ludelle
Ft. Worth, Texas
Metals: A, F

Hurd Lock & Manufacturing Co.
Almont Division
Almont, Michigan
Metals: F
Machining: 1, 4
Finishing: 4, 6
Assembly: yes

Ideal Toy Corp.
184-10 Jamaica Ave.
Hollis, N. Y.
Metals: F

Illinois Advance Die & Mold Co.
2005 North Major Ave.
Chicago 39, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 6
Finishing: 1, 6

Illinois Lock Co., The
819 S. Ada
Chicago 7, Ill.
Metals: F

Imperial Die Casting Corp.
11411 Knightsbridge Ave.
Culver City, Calif.
Metals: A

Indiana Steel Products Co., The
Valparaiso, Ind.
Metals: A (Alinco Magnet housings only)

Industrial Die Cast & Mfg. Co., Inc.
2980 N.W. 22nd St.
Miami, Fla.
Metals: A, F

Industrial Die Casting Co.*
2300 North Lister Ave.
Chicago 14, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6

for key see page 87

★DIE CASTING
★CENTRIFUGAL CASTING
• ALL LEAD BASE ALLOYS!
• ANY LEAD CASTING PROBLEM CAN BE SOLVED
• THE Authenticast WAY !!
• COMPLETE ASSEMBLED PRODUCT
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• SEND BLUEPRINTS or SPECS to
• Authenticast

★BABBIT BEARINGS
• MADE TO ORDER!
• SEND SPECIFICATIONS to
• Authenticast

★ESTIMATES GIVEN
• WITHOUT OBLIGATION!

★REMEMBER —
• Authenticast HAS the ANSWER to YOUR PROBLEMS !!

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COMET METAL PRODUCTS CO. INC.
91-07 132nd St. Richmond Hill, N.Y.

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Cast four *different* sizes, shapes, and types of products *all at the same time.* You can mix runs . . . one, two or three can be short runs, the rest long. New molds can be inserted in minutes to continue production . . . or just plug with blank inserts and continue long run. What's more, you get the same economy of operation running two or three units!

Richards 4-unit **MASTER-MOLD** means fast change-over and interchangeability — cuts time and labor costs *right from the start.* And you get these important advantages *only* with Richards!

WRITE FOR COMPLETE INFORMATION on Richards specially designed 1-2-3-and 4-unit **MASTER-MOLDS** for die casting zinc, aluminum, magnesium or copper alloys, or injection molded plastics.

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Only Pennies Per Part

only the new Minicast High Production Process gives you miniature parts with

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- exceptional surface finish as low as 30 to 50 microinches
- complex configurations
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Casting Engineers INC.

2325 NORTH BOSWORTH AVENUE
CHICAGO 14, ILLINOIS

Circle No. 25 on the Reader Service Card

Assembly: yes

Inland Die Casting Company, Inc.
8141 North Lawndale
Skokie, Illinois
Metals: A
Machining: 1, 2s, 3s, 4, 5s
Finishing: 1, 2s, 6s

Irrigation Equipment Company, Inc.
Industrial Division
1300 Bethel Drive
Eugene, Oregon
Metals: A, B, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 5, 6
Assembly: yes

Irvington Die Casting Co.
133 S. 20 St.
Irvington, N. J.
Metals: A, F

J. & F. Tool & Die Casting Corp.
R. D. 2
Athens, Pa.
Metals: F
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 6, 6s, 7, 7s
Finishing: 1, 3
Assembly: yes

Jersey Plastic and Die Casting Co.* **
149-165 Shaw Ave.
Irvington 11, N. J.
Metals: A, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7, 7s
Finishing: 1, 2, 6
Assembly: yes

Jervis Corp.
Middleville, Mich.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6

Jet Die Casting Corp.* **
1317 West Concord Pl.
Chicago 22, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 6s

Jet Guns Company
908 N. P. Anderson Bldg.
Fort Worth 2, Texas
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 7
Finishing: 1, 3s, 6, 7s
Assembly: yes

Joma Manufacturing Company, Inc.
901 Zerega Ave.
New York 72, N. Y.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4
Assembly: yes

Kadee Metal Products
720 South Grape St.
Medford, Oregon
Metals: A, F
Machining: 1s, 3s, 4s, 6s
Finishing: 1, 1s, 4, 4s, 5, 5s, 6, 6s

Kalamazoo Die Casting Co.
Mastenbrook Drive & Milham
Kalamazoo, Mich.
Metals: A, F
Machining: 1, 1s, 2, 3, 4, 5, 6, 7

for key see page 87

PLAST-IRON POWDERS

Grade B-280

Reduced Iron Powder-80
One Pressing at 30 TSI
One Sinter at 2050°F-30M
27,500 PSI Tensil
68,500 PSI Modulus
Rockwell 85H

Add 7% Copper
40,500 PSI Tensil
77,500 PSI Modulus
Rockwell 50B

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PLASTIC METALS
Division
National-U.S. Radiator Corporation

3459 BRIDGE STREET
JOHNSTOWN, PA.

Circle No. 75 on the Reader Service Card

Finishing: 1, 3s, 4s, 5s, 6s
Assembly: yes

Kamin Die Casting & Manufacturing Co.*
3315 North Knox Ave.
Chicago 41, Illinois
Metals: A, F
Machining: 1, 2, 3, 5, 6, 7
Finishing: 1
Assembly: yes

Keeler Brass Company
947 Godfrey, South West
Grand Rapids, Mich.
Metals: A, F
Machining: 1, 2, 3, 4
Finishing: 1, 2, 3, 4, 6, 7
Assembly: yes

Ken-Moore Die Cast
Div. of Automotive Appliance Co.
12299 Woodbine
Detroit 39, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 5s
Assembly: yes

Kennedy Die Castings, Inc.
200 Harding St.
Worcester 4, Mass.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Mark Kenny Products Company, Inc.
251 East 137th St.
New York 51, N. Y.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 6
Assembly: yes

Kent Castings Corp.
200 Garden Street, South East
Grand Rapids 7, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

Kiowa Corp.* **
610 S. 12 Ave.
Marshalltown, Iowa
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6, 7s

Kiser Plating & Mfg. Co., Inc.
P. O. Box 904
401 East Howard Street
Muncie, Indiana
Metals: A, F
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

Kisiel Die Casting Works
P. O. Box 471
Batavia, New York
Metals: A, F
Machining: 1, 2s, 3s, 4, 5, 6, 7
Finishing: 1, 2, 6

Kitchen-Quip, Inc.
East Marion St.
Waterloo, Ind.
Metals: A
Machining: 1, 2s, 3s, 4s, 6s, 7s
Finishing: 1, 2, 3, 6
Assembly: yes

Kolsters Tool & Die Co.
8451 Baldwin St.
Oakland 21, Calif.
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 3s, 4s, 6
Assembly: yes

Paul Krone Die Casting Co.* **
1811 North Kostner Ave.
Chicago 39, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 2s, 3s, 4s, 5s, 6, 7s

Kuhlman Diecasting Co.
7300 East 17th St.
Kansas City 26, Mo.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6s, 7
Finishing: 1, 2, 3, 4, 5s, 6s, 7s
Assembly: yes

Laco Die Casting Co.
23440 Lakeland Blvd.
Euclid 23, Ohio
Metals: F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 3s, 4, 6

La France Precision Casting Co.
29th & McKean Streets
Philadelphia 45, Pa.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5
Assembly: yes

Lake Center Switch Co.
51 Johnson
Winona, Minn.
Metals: F

Lakeshore Die Casting, Ltd.
P. O. Box 23
Oakville, Ont., Canada
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Lansco Die Casting Co.* **
2029 North Chico Ave.
El Monte, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 6
Assembly: yes

Latrobe Die Casting Co.*
Box 149
Latrobe, Pa.
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2s, 5s, 6
Representatives: *Akron, Ohio*, E. G. Siess Jr., 227 W. Exchange; *Cleveland, Ohio*, Wm. Kranz Jr., 19615 W. Lake Rd.; *Dayton, Ohio*, J. M. Gallaher, 363 W. 1st St.; *Detroit, Mich.*, J. R. Lemen Jr., 1016 Fisher Bldg.; *Stamford, Conn.*, R. L. Thomson, 79 Prospect St., *Baltimore, Md.*, R. R. Thum, 611 S. William St.; *Buffalo, N. Y.*, H. W. Harding, 235 Burk Drive; *Philadelphia, Pa.*, A. B. Reid.

Leco Plating Co.
Hilltop Rd.
St. Joseph, Mich.
Metals: F

Lee Engineering Co.
2023 West Wisconsin Ave.
Milwaukee 3, Wis.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: yes

Lee Silver Service, Inc.
13561 Helen Ave.
Detroit 1, Mich.
Metals: F
Machining: 1, 3
Finishing: 1, 2, 3, 4, 5
Assembly: yes

Lester Castings, Inc.*
P. O. Box 42
Bedford, Ohio
Metals: A, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6

Ray Lewis & Son, Inc.
Delaware Rd.
Marysville, Ohio
Metals: F

Lincoln Die Casting, Inc.
20805 Mound Rd.
Warren, Mich.
Metals: F
Machining: 1, 2s, 3, 4s, 5, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Lincoln Industries, Inc.
4701 West Grand Ave.
Chicago 39, Ill.
Metals: A, D, F
Machining: 1, 2, 3, 4, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Line Tool & Machine Co.
21225 Van Dyke
Warren, Mich.
Metals: A
Machining: 1, 2, 3, 4, 6, 7
Assembly: yes

Litemetal Dicast, Inc.*
1927 Wildwood Ave.
Jackson, Michigan
Metals: A, D, F
Machining: 1s, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 3s
Representatives: *Detroit, Mich.*, Frank Wickham, 19451 James Couzens Highway; *Evanston, Ill.*, Geo. Wagner, 615 Sheridan Rd.; *Wauwatosa, Wis.*, Newton Snashall, 1306 N. 63rd Ct.; *Saint Paul, Minn.*, L. C. Newton, 1953 University Ave.; *Norwalk, Conn.*, Light Metal Assoc., 25 Belden Ave.; *Wayne, Pa.*, Ryan-Sawyer, 201 S. Aberdeen.

Little Giant Pump Co.
5101 Classen Blvd.
Box 9545
Oklahoma City 18, Okla.
Metals: A

for key see page 87

Littler Diecast Corp.
P. O. Box 426
Albany, Ind.
Metals: A
Machining: 1, 1s, 2s, 3s, 4, 5s, 6s, 7
Finishing: 1, 2s, 3s, 5s, 6, 6s

Logan Industries, Inc.
1640 West Carroll Ave.
Chicago 12, Ill.
Metals: F
Machining: 1, 2, 3, 4s, 5, 6, 7
Finishing: 1, 2, 3, 4s, 5, 6, 7s
Assembly: yes

Long Island Die Casting, Inc.
21 Smith
Inwood 96, L. I., N. Y.
Metals: F

Los Angeles Die Casting Co.* **
340 Crocker St.
Los Angeles 13, Calif.
Metals: A, B, F
Machining: 1, 2, 2s, 3, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Ludman Corp.
14100 Biscayne Blvd.
North Miami, Fla.
Metals: A, F

Lyons Diecasting Company
Buckner, Missouri
Metals: A, F
Machining: 1, 2, 3, 4, 5
Finishing: 1, 2s, 3s, 4, 5s, 6, 7s

Madison-Kipp Corp.* **
213 Waubesa
Madison, Wis.
Metals: A, F
Assembly: yes

Magnesium Industries, Inc.
1313 Kalamazoo St.
South Haven, Mich.
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 6
Finishing: 1
Assembly: yes

Manger Die Casting Co., Inc.
198 Seymour Ave.
Derby, Conn.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 3, 3s, 4, 4s

Manor Die Cast Corp.*
Box 386
Bedford, Ohio
Metals: A
Machining: 1, 2, 3, 4
Finishing: 1, 2s, 3s
Assembly: yes

Mantua Metal Products Co., Inc.
Woodbury Heights, New Jersey
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 5, 6
Assembly: yes

Jos. P. Manz Die Casting Co.*
550 West Beach Ave.
Inglewood 3, Calif.
Metals: A, F
Machining: 1
Finishing: 1, 6

Marco Industries, Inc.
3rd & Franklin Sts.
Womelsdorf, Pa.
Metals: A

L. E. Mason Co.*
98 Business St.
Boston 36, Mass.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 6s
Assembly: yes

Master Fabricators, Inc.
6 Brooklyn Ave.
Massapequa, Long Island, N. Y.
Metals: F
Machining: 1, 4, 7
Assembly: yes

Mendler Manufacturing Co.
Box 125 Sandwich Postal Station
Windsor, Ont., Canada
Metals: F
Machining: 1, 2
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Meta-Mold Aluminum Company*
Sub. of The Dayton Malleable Iron Company
525 East Hamilton Rd.
Cedarburg, Wisconsin
Metals: A, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1

Metal-Cast Company
616 16th Ave., West
Birmingham 4, Alabama
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6
Assembly: yes

Metalmasters, Inc.*
5292 Northwest Highway
Chicago 30, Illinois
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1
Assembly: yes

Metal-X Specialties Co., Inc.
5 E. Third
New York 3, N. Y.
Metals: A, C, F

Metro Casting Company, Inc.
47 Grattan St.
Brooklyn 37, N. Y.
Metals: F
Machining: 1, 4s, 6s, 7s
Finishing: 1, 3s, 4s, 6
Assembly: yes

Micro-Products Engineering Co.
230 Ridgewood Ave.
Newark 8, N. J.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 4s, 5, 6, 6s
Assembly: yes

Midwest Die Casting Co.* **
3930 N. First
Milwaukee 12, Wisc.
Metals: F

Mid-State Die Casting Co.
7878 S. Division Ave.
Grand Rapids 8, Mich.
Metals: F

Mid-Western Die Casting Co.
1501 North Halsted St.
Chicago 23, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s

Milburn Manufacturing Co.
P. O. Box 7
Burlington, Ky.
Metals: C, F
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2, 4, 6
Assembly: yes

Milwaukee Die Casting Co.* **
4132 North Holton St.
Milwaukee 12, Wis.
Metals: A, C, E
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Missouri Diecasting Co.* **
1411 North 17th St.
St. Louis 6, Mo.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 6s, 7s
Assembly: yes

Model Die Casting, Inc.
3811 W. Rosecrans
P. O. Box 926
Hawthorne, Calif.
Metals: A, B, C, D, F
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 4
Assembly: yes

Modern Auto Accessories, Inc.
1328 W. Pico Blvd.
Los Angeles 15, Calif.
Metals: F
Machining: 1, 6, 7
Finishing: 1, 2, 3, 3s, 4, 5s, 6, 6s, 7s
Assembly: yes

Modern Die Casting Corp.*
5419 N. Kedzie Ave.
Chicago 25, Ill.
Metals: A, F

Modern Pattern & Foundry Co., Inc.
5610 Alcoa Ave.
Los Angeles 58, Calif.
Metals: A, B, C, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4, 5, 6
Assembly: yes

Mohawk Foundries, Inc.
55 First St.
Berea, Ohio
Metals: A, D
Machining: 1, 5, 7
Finishing: 1, 2, 4, 4s, 6, 6s
Assembly: yes

Molded Products Co., Inc.
2820 North Sylvania St.
Fort Worth 11, Texas
Metals: A, C, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: yes

for key see page 87

Monarch Aluminum Mfg. Co.* **
9205 Detroit Ave.
Cleveland 2, Ohio
Metals: A, F
Machining: 1, 2, 3, 5, 7
Finishing: 1, 2, 4s, 5s, 6
Representatives: *Cleveland 2, Ohio,* Joseph Sarier, 9205 Detroit Ave., Manley S. Hutchinson, 9205 Detroit Ave.; *Rochester, N. Y.,* Gerald C. Liebel, 432 Browncroft Blvd.

Monarch Die Casting Corp.
1642 - 20th St.
Santa Monica, Calif.
Metals: A, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Monarch Governor Co.
2800 Tyler Rd.
Willow Run, Mich.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4s, 5, 6, 7s
Assembly: yes

Monarch Tool & Machine Corp.
1847 Highland Ave.
New Hyde Park, L. I., N. Y.
Metals: F

Monroe City Diecasting Co.
Div. Kuhlman Diecasting Co.
135 Front Street
Monroe City, Mo.
Metals: A, F
Machining: 1, 3, 4, 5, 7
Finishing: 1, 2, 3s, 4s, 6, 6s
Assembly: yes

Morton Mfg. Co.
7025 Sarpy Ave.
Omaha 7, Nebr.
Metals: A, F
Machining: 1, 2s, 3s, 4s, 5s, 6, 7s
Finishing: 1, 5, 6
Representatives: *Omaha, Nebr.,* C. G. Morton, 7034 Sarpy

Mt. Vernon Die Casting Corp.* **
Southfield Ave.
Stamford, Conn.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 4s, 6, 6s
Assembly: yes
Representatives: *Stamford, Conn.,* Mr. Anker Anderson, Cascade Rd.; *Cleveland, Ohio,* Mr. Grant Eller, 6 E. 194th St., *Guilderland, N. Y.,* Mr. David King, 75 Willow St.; *Brooklyn 29, N.Y.,* Mr. Robert Moore, 2317 Plumb 2nd St.; *Rochester 16, N. Y.;* Mr. William Sauers, 101 Briarcliff Rd.; *Skaneateles, N. Y.,* Mr. Jerome Theobald, 9 E. Genesee St.; *Valley Forge, Pa.,* Mr. G. T. McMaster, P. O. Box No. 115; *Wharton, N. J.,* Mr. Henry Turner, Rd. 2 - Box 182B; *Birmingham, Ala.,* Mr. I. B. Armstrong, Jr., P. O. Box 2244; *Quincy, Mass.,* Mr. E. W. Libby, 91 Merrymount Rd.; *Lutherville, Md.,* Mr. C. Gordan, Mays Chapel Rd.

A. B. Mueller & Co.
2101 E. John Ave.
St. Louis 7, Mo.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4
Assembly: yes

Name Products, Inc.
852 E. Valley Blvd.
San Gabriel, Calif.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: yes

Nashua Corp.
44 Franklin St.
Nashua, N. H.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 3s, 4, 5s, 6
Assembly: yes

National Casting Corp.
6517 - 14th Ave.
Brooklyn 19, N. Y.
Metals: C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1
Assembly: yes

National Die Casting Co.
3635 W. Touhy Ave.
Chicago 45, Ill.
Metals: A, F

National Hardware Specialties, Ltd.
Box 250
Dresden, Ont., Canada
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

National Lead Company* **
Doehler-Jarvis Division
525 Cottage Grove St., S.E.
Grand Rapids, Michigan
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4
Assembly: yes

National Lead Company* **
Doehler-Jarvis Division
Batavia, New York
Metals: A, B, D
Machining: 1, 2, 3, 4, 5, 6, 7
Assembly: yes

National Lead Company* **
Doehler-Jarvis Division
Dixie Highway & Willamont Road
Toledo, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Assembly: yes

National Lead Company* **
Doehler-Jarvis Division
2100 Smead Avenue
Toledo, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Assembly: yes

National Lead Company* **
Doehler-Jarvis Division
Pottstown, Pa.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 4
Assembly: yes

National Lock Co.
1902 Seventh St.
Rockford, Ill.
Metals: F
Machining: 1, 2, 3s, 4s, 5s, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: yes

National Metal Products
10th & Eastern Ave.
Connersville, Ind.
Metals: C, F
Finishing: 1, 2, 3, 6

National Ornament Co.
6517 14th Ave.
Brooklyn 19, N. Y.
Metals: F

Nelson Metal Products, Inc.* **
510 - 32nd, S.E.
Grand Rapids 8, Mich.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6s 7s
Assembly: yes

New England Die Casting Co., Inc.
445 Front Ave.
West Haven, Conn.
Metals: A, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3, 4, 5, 6s, 7s

New England Tool Corp.
53 Houghton St.
Hudson, Mass.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

New Products Corp.*
448 North Shore Dr.
Benton Harbor, Mich.
Metals: A, C, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Newton Industries, Inc.
100 Saw Mill Rd.
West Haven, Conn.
Metals: A, F

Newton-New Haven Co., Inc.* **
680 Third Ave.
West Haven 16, Conn.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s, 7s
Assembly: yes

Nordon Die Casting Co., Inc.* **
30 N. Eighth Ave.
Maywood, Ill.
Metals: A, F

Norgren-Stemac, Inc.* **
5400 South Delaware
Littleton, Colorado
Metals: F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: yes

for key see page 87

Norlipp Company
5909-5935 South Lowe Ave.
Chicago 21, Ill.
Metals: F
Machining: 1, 2, 6, 7
Finishing: 1, 2, 3, 4s, 5s, 6s, 7s
Assembly: yes

Northern Iowa Die Casting Co.
P. O. Box 93
Spirit Lake, Iowa
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s
Assembly: yes

Norwood Tool & Machine Co.
900 Wood
Three Rivers, Mich.
Metals: A, F

Ohio Die Casting Corp.
266 East Fifth Ave.
Columbus 1, Ohio
Metals: A, F
Machining: 1, 2, 2s, 3, 3s, 4s, 5, 5s, 6, 6s, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: yes

Ontario Steel Products Co., Ltd.
Box 2004
Chatham, Ont., Canada
Metals: F
Machining: 1, 3, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

Oswego Castings Corp.*
Box 222
Oswego, N. Y.
Metals: A
Machining: 1
Finishing: 1, 2s, 3s

Page & Hall Mfg. Co., Inc.
1600 Hyde Park Ave.
Hyde Park 36, Mass.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: yes

Pan American Metal Products Co., Inc.
401 North West 71st St.
Miami 38, Florida
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5s, 6, 7s
Assembly: yes

Paragon Die Casting Co.* **
5851 West Dickens Ave.
Chicago 39, Ill.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 4s, 6, 6s
Assembly: yes

Paramount Aluminum Foundry
15142 South Paramount Blvd.
Paramount, Calif.
Metals: A
Machining: 1, 1s, 7
Finishing: 2

Paramount Die Casting Products Co.
8313 E. Ten Mile Rd.
Centerline, Mich.
Metals: F

Paramount Die Casters, Inc.
Freeman Field
Seymour, Ind.
Metals: A, F
Machining: 1, 3
Finishing: 1

Paramount Die Casting Co.* **
U. S. 12
St. Joseph, Mich.
Metals: A, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes
Representatives: *West Palm Beach, Fla.*, Arthur L. Fischer, 841 - 29th St.; *Shaker Heights 20, Ohio*, Arthur E. Hills, 3588 Normandy Rd.; *Detroit 35, Mich.*, C. R. Hoofnagle, 18264 James Couzens Hwy.; *South Orange, N. J.*, Lough Brothers, 5 Vose Avenue; *Baltimore 12, Md.*; B. L. Meredith, 1624 Heathfield Rd.

Parker White Metal Co.* **
2153 McKinley Ave.
Erie, Pa.
Metals: A, B, C, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

Parlyn Products Corp.
556 South Monterey Pass Rd.
Monterey Park, Calif.
Metals: F
Machining: 1, 2, 4, 6, 7
Finishing: 1, 1s, 2, 2s, 4, 4s, 5
Assembly: yes

Peasley Products, Inc.* **
993 Honeyspot Rd.
Stratford, Conn.
Metals: A, F
Machining: 1, 2, 7s
Finishing: 1, 2s, 3s, 4, 5, 6, 7s
Assembly: yes

Peat Manufacturing Co.* **
10700 East Firestone Blvd.
Norwalk, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Peerless Aluminum Foundry Co., Inc.*

Peerless Die Casting & Permold Div.
55 Andover
Bridgeport, Conn.
Metals: A

Permanent Casting Co.
P. O. Box 191 - A. P. Station
Hot Springs, Ark.
Metals: A

Peterson's Machine Shop
250 Russell Street
Lewiston, Maine
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 5, 6
Assembly: yes

Petoskey Manufacturing Co.
200 West Lake St.
Petoskey, Mich.
Metals: F
Machining: 1, 2, 3, 4, 5, 6
Finishing: 1, 2, 3, 4, 5, 7s

Ben Phillips Nameplates
132 W. Verdugo Ave.
Burbank, Calif.
Metals: F
Machining: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7, 7s
Finishing: 1, 2, 3s, 4, 5s, 6s, 7s

Phoenix Die Casting Co.* **
21-23 Illinois St.
Buffalo 3, N. Y.
Metals: A, C, F
Machining: 1

Pierson Machine Co.
R. D. #2
Telford, Pa.
Metals: F

Pioneer Diecasters, Inc.* **
4209 Chevy Chase Dr.
Los Angeles 39, Calif.
Metals: A, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Pittsburgh Die & Casting Co.* **
7503 Ardmore Street
Swissvale, Pittsburgh 18, Pa.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6, 7s
Assembly: yes

Pittsburg Industries, Inc.
111 South Elm St.
Pittsburg, Kansas
Metals: A, C, F

Pixie Jewelry, Inc.
23 East 17th St.
New York 3, N. Y.
Metals: C, E, F
Machining: 1
Finishing: 1, 2, 3s, 4, 6s, 7s
Assembly: yes

Pomona Die Casting
4253 State
Pomona, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2s, 3s, 4s, 5s, 6
Assembly: yes

A. O. Pope, Ltd.
90 Winter St.
Saint John, N. B., Canada
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 6
Assembly: yes

Power Brake Equipment Co.
1632 South East 11th Ave.
Portland 14, Ore.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5, 6s
Assembly: yes

Precision Aluminum & Brass Castings*
355 West Olive
Gardena, Calif.
Metals: A, B, D
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

for key see page 87

Premier Die Casting Co.*
28 - Margaretta St.
Newark 5, N. J.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: yes
Representatives: *Westport, Conn.*, T. Smith; *Newark, N. J.*, J. Murray; *Philadelphia, Pa.*, J. McCreery.

Pressco Casting & Mfg. Corp.
Waverly and Broadway
Chesterton, Indiana
Metals: B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: yes

Pressure Cast Products Co.
1239 High St.
Oakland 1, Calif.
Metals: A, B, F
Machining: 1, 2s, 3s, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Pressure Castings, Inc.* **
21500 St. Clair Ave.
Cleveland 19, Ohio
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Pressure Castings of Canada, Ltd.
67 Main Street, South
Toronto 15, Ont., Canada
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6s, 7
Assembly: yes

Procter Metal Products
P. O. Box 696
San Marcos, Texas
Metals: A, F

Product Engineering Co.
4707 South East 17th Ave.
Portland 2, Oregon
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 3s, 4s, 5s, 6, 7s
Assembly: yes

Product Engineering & Mfg. Corp.
Box 57
Bridgman, Michigan
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4,
Assembly: yes

Production Aluminum Co.
338 Wealthy, S.W.
Grand Rapids, Mich.
Metals: A
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Production Die Casting Co.*
6502 Rusk Ave.
Houston 11, Texas
Metals: A, F
Machining: 1, 2s, 3s, 4, 5s, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

Production Mold & Machine Co.
2112 Leota Street
Huntington Park, Calif.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 6

Products Engineering & Mfg. Corp.
Noeland Avenue
Penndel, Pa.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Puget Die Casting Co.
Day Island Waterway
Tacoma 66, Wash.
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 6
Assembly: yes

Pyramid Corp.
915 Cleveland
Amarillo, Texas
Metals: A, C, F

Quad-City Die Casting Co.* **
3800 River Drive
Moline, Illinois
Metals: A, F
Machining: 1, 1s, 2s, 3, 4, 4s, 5, 6, 7s
Finishing: 1, 4, 4s, 5, 5s, 6, 6s

Quality Diecasters
13714 - 37th N.E.

for key see page 87

even on experimental work..

YOU SAVE WHEN YOU SPECIFY OPC CASTINGS

This intricate casting, a component of an aircraft valve assembly, is being produced for Koehler Aircraft Products Co., Inc. As a part of an experimental program, only a few of these castings have been turned out, yet they have already proved economical.

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Seattle 55, Wash.
Metals: F

Quality Metal Finishing Co.
4th & Walnut Sts.
Byron, Ill.
Metals: F
Machining: 1, 3, 4, 5s, 6s, 7s
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

Queens Tool Mfg. Co., Inc.
15 Front St.
Rockville Centre, L. I., N. Y.
Metals: F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Racine Die Casting Co.* **
1500 16th St.
Racine, Wisc.
Metals: A, F

Rainbow Canyon Mfg. Corp.
Rt. 2 Box 198-D
Fallbrook, Calif.
Metals: A, B, C, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

Ranchers Corp.
Murrieta, Calif.
Metals: A, F

Rangers Die Casting Co.*
10828 South Alameda St.
Lynwood, California
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s

Redl Industries, Ltd.
P. O. Box 105
Port Moody, B. C., Canada
Metals: C, E, F
Machining: 1
Finishing: 1, 2, 4

Reese Padlock Co.
128 Sherman St.
Lancaster, Pa.
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6
Assembly: yes

A. C. Rehberger Co.
2134 North Magnolia
Chicago 14, Illinois
Metals: C, F
Finishing: 2, 3
Assembly: yes

Remington Arms Co., Inc.
25000 South Western Ave.
Park Forest, Ill.
Metals: A, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: yes

Republic Die Casting Co.* **
611 Talcott Avenue
St. Louis 7, Mo.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7s

for key see page 87

NOW! A Revolutionary Fast Hydraulic TRIMPRESS to Exactly Fit Your Needs!

Turn Out More Parts Per Day

- Lower Cost per Part!
- Lower Maintenance and Tooling Cost!
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- Can Be Moved to the Job!
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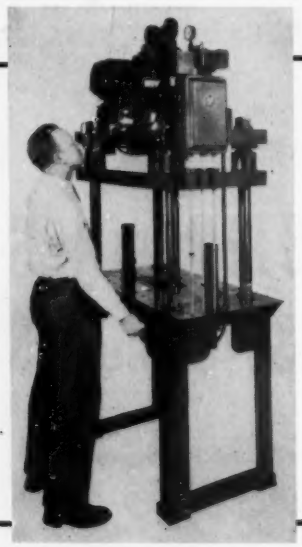

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Buffalo Metal Container Corp.
75 Meadow Rd. BA 3944 Buffalo 16, N.Y.

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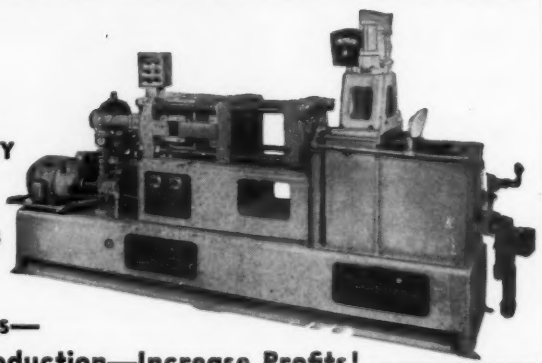
UP TO FULL
3 lb.
SHOT CAPACITY

Over 1300 Free Cycles Per Hour!



Reduce Costs—
Speed up Production—Increase Profits!

Now you can run high grade castings, up to 3 lbs., at high speeds and low operating costs. Actual tests operating 8 hours a day, 5 days a week, show total cost of gas and electricity of ONLY 17c PER HOUR!

Outstanding features include — all steel welded construction — automatic electric cycling at high speed — 17¾ x 17¾" die platens — 6½" die stroke — highest grade controls and valves mounted for easy maintenance and accessibility — a complete package with self contained unit.

Available in Air or Hydraulically operated plunger gooseneck type for zinc, tin or lead, or, cold chamber type for aluminum, brass and magnesium.

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Ajax Die Casting Co.
Minneapolis-Honeywell Regulator Co.
General Motors Corp.
Rochester Prod. Div.
Helfrich Die Casting Co.
Newton-New Haven and others

For more information circle No. 23 on the Reader Service Card

Finishing: 1, 2, 2s, 3, 3s, 4, 5, 5s, 6, 6s
Assembly: yes

Reuhl Products, Inc.
4505 W. Beltline Hwy.
Madison, Wisc.
Metals: F

Rhopac Inc.
3425 Cleveland
Skokie, Ill.
Metals: C

Richmond Machine Tool & Die Casting Co., Ltd.
5680 Fullum Street
Montreal 36, Quebec, Canada
Metals: A, F
Machining: 1, 2, 3, 4, 6, 7
Finishing: 1, 2, 3, 4, 6
Assembly: yes

Ridco Casting Co.
669 Elmwood Ave.
Providence, R. I.
Metals: A, C, E, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 3, 4, 4s, 6s, 7
Assembly: yes

Roberts Engineering & Mfg. Co., Inc.
Box 4060, 640 Navigation
Corpus Christi, Texas
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 6, 7

Rollin Wilson Company, The
1213 Empire Ave.
Memphis, Tenn.
Metals: F

Romada Tool & Mfg. Co.
9536 Dearborn Ave.
Detroit 9, Michigan
Metals: F

Rowe Plastics & Die Casting Co.
955 W. Schubert Ave.
Chicago 14, Ill.
Metals: A, F
Machining: 1, 2, 3, 4s, 5s, 6, 6s, 7s
Finishing: 1, 2, 6

Ruffe, Inc.
7525 N.W. 37th Ave.
Miami, Fla.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: yes

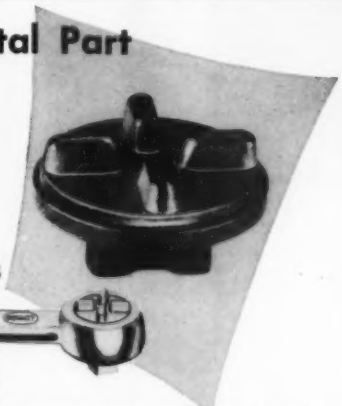
Rupert Diecasting Co.* **
1655 Cleveland
Kansas City 27, Mo.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 4s, 5, 6

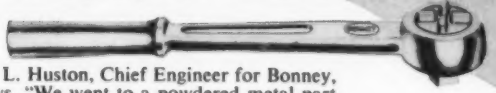
Rutherford Brother Plating Co.
7 Emerick Street, Box 490
Ypsilanti, Mich.
Metals: F
Machining: 1
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 6, 6s
Assembly: yes

S. K. S. Die Casting Co.
739 Allston Way
Berkeley, Calif.

for key see page 87

Remet Powdered Metal Part
cuts
DESIGN
and
MACHINING
costs
for Bonney Forge and Tool Works





R. L. Huston, Chief Engineer for Bonney, says, "We went to a powdered metal part on our shifter because the cost of machining this part from steel would have been prohibitive. Also, we would have had to change the entire design of our ratchet. We contacted no less than a dozen fabricators of powdered metal. Reese Metal Products Corp. was the only establishment able or interested in tackling this problem with us."

Bonney now uses Remet shifters in seven of their ratchets. The sintered Remet parts are copper infiltrated iron.

More and more design and production men each year rely on Remet services to help solve problems.

FREE BROCHURE "How to Cut Precision Parts Cost with the Remet Powdered Metal Process" shows how the Reese Corp. can help you. Send for your copy today.

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COPPER • BRASS • IRON • ALLOY STEEL • NICKEL SILVER • COPPER INFILTRATED IRON

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Skill
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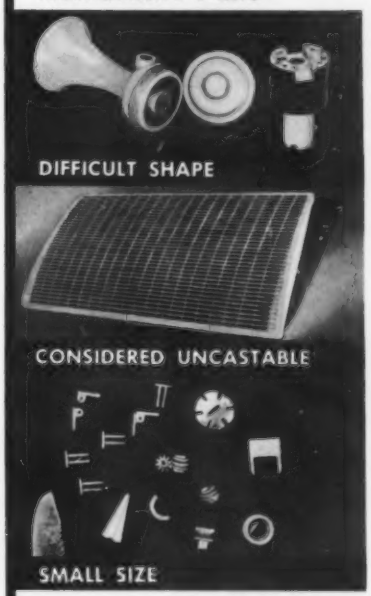
ZINC DIE-CASTINGS
. . . Produced these HIGH-QUALITY PARTS



This know-how and experience can greatly simplify your manufacturing problem . . . give you custom-built zinc die-castings to exacting specifications that cost *no* more.

★ Specialists in superior zinc die-castings from fractions of an ounce to 4 lbs.

★ Able, interested engineers to help solve "impossible parts" problems.

★ Consult us, without obligation, as have many value-minded, quality seeking manufacturers.

Stella
PRODUCTS CORPORATION
66 Okner Parkway, Livingston, N. J.

Circle No. 93 on the Reader Service Card

Metals: A, F
Machining: 1, 2, 4, 7
Finishing: 1, 3s, 4s, 5, 6, 7s
Assembly: yes

S. U. S. Die Casting Co., Inc.
41 E. Market
Logansport, Ind.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6s, 7
Finishing: 1, 2, 3s, 4s
Assembly: yes

Saginaw Bay Industries, Inc.
242 North Water St.
Bay City, Michigan
Metals: A, D
Machining: 1, 2, 3, 4s, 5, 6s, 7s
Finishing: 1, 2, 4, 4s, 5, 5s, 6
Assembly: yes

St. Louis Diecasting Corp.* **
4528 Oleatha Ave.
St. Louis 16, Mo.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 3s, 4, 4s, 6
Assembly: yes

San Angelo Die Casting & Mfg. Co.
Box 984
San Angelo, Texas
Metals: A
Machining: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 6, 6s
Finishing: 1, 1s, 2, 2s, 4, 4s, 6, 6s
Assembly: yes

San Jose Die Casting Corp.
815 Chestnut St.
San Jose 10, Calif.
Metals: A, B, C, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7
Finishing: 1, 1s, 2s, 3s, 4s, 5s, 6, 6s, 7s
Assembly: yes

Scherer Die Casting Co.
Alyce Avenue
Cedarburg, Wis.
Metals: A
Machining: 1, 2, 3, 4, 6
Finishing: 1, 2, 2s

Schilling Bronze Co.
202-216 East North St.
Rome 3, New York
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 6
Assembly: yes

K. E. Schoell Co.
764 N.W. 75 St.
Miami, Fla.
Metals: C, E, F

Schultz Die Casting Co.* **
1810 Clinton St.
Toledo 7, Ohio
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s

Schultz Die Casting Co. of Canada, Ltd.* **
Wallace Street
Wallaceburg, Ont., Canada
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3, 4, 4s, 6s
Assembly: yes

Seaboard Diecasting Corp.* **
1125 Prospect Ave.
West Islip, L. I., N. Y.
Metals: F

Serv-All Die & Tool Co.
Box 117
Crystal Lake, Ill.
Metals: F

Sheldon Die Casting Co.
859 N. Prior Ave.
St. Paul 4, Minn.
Metals: A, F

Sherman Pressure Casting Corp.* **
601 West 26th Street
New York 1, New York
Metals: A, D, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 2s, 3s, 4s, 5s, 6, 6s, 7s
Assembly: yes
Representatives: *Upper Darby, Pa.*, H. J. Westerman, P. O. Box 26; *New York, N. Y.*, Kurtiss P. Schenke, 130 East 40th St.

Soper Manufacturing Co.
1099 Milton St.
Benton Harbor, Mich.
Metals: F
Machining: 1, 2, 3, 4

Southern Calif. Plating Co.

U. S. License Frame Mfg. Co. &

for key see page 87

BENERSON CORPORATION

Designers and Builders
of Die-Cast Dies and Trim
Dies for Die-Castings

- TOOLS
- DIES
- DIE-CAST DIES
- PLASTIC MOLDS

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ZINC AND ALUMINUM
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These compounds are made in several grades to meet various application requirements such as brushing, swabbing, or spraying. Permit greater production because of more pieces between applications. Improves surface finish . . . prevents sticking and soldering . . . minimizes carbon formation . . . reduces fumes and smoke. Bulletins describing Fiske's Die Casting Compound and other specialty lubricants and coolants sent on request.

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LUBRICANTS

FISKE BROTHERS REFINING CO.
129D LOCKWOOD STREET, NEWARK 5, N. J.
Plants: Newark 5, N. J. and Toledo 5, Ohio

For more information circle No. 60 on the Reader Service Card

Mfg. Div.
3436 San Fernando Rd.
Los Angeles 65, Calif.
Metals: A, F

Southern Industrial Die Casting Co.
Highway 319 North
Moultrie, Georgia
Metals: A, F
Machining: 1
Finishing: 1, 6

J. W. Speaker Corp.
3059 North Weil St.
Milwaukee 12, Wis.
Metals: F
Machining: 1, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: yes

Speedmaster Engineering Co.
900 Doolittle Drive
San Leandro, Calif.
Metals: A, B, F
Machining: 1, 1s, 2, 2s, 3s, 4s, 5, 5s, 6, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Springfield Die Casting Co., Inc.* **
720 Lexington Ave.
Kenilworth, New Jersey
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7
Assembly: yes

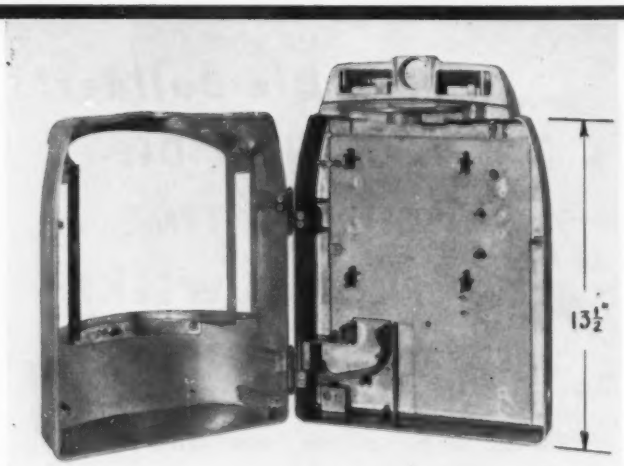
Starlight Specialties, Inc.
22-14 40th Ave.
Long Island City 1, N. Y.
Metals: F
Machining:
Finishing: 2s, 3s, 6s
Assembly: yes

Staver Company, Inc., The
41 - 55 North Saxon Ave.
Bay Shore, New York
Metals: C, E
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Stella Products Corp.* **
66 Okner Parkway
Livingston, N. J.
Metals: F
Machining: 1, 2, 3, 4s, 5, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes
Representatives: *East Haven, Conn.*, M. L. Gandossy, 40 Oregon Ave.; *Bryn Mawr, Pa.*, John F. Orsi Associates, P. O. Box 346; *Detroit 2, Mich.*, Lor-Mac Associates, 907 Fisher Bldg.; *New York 17, N. Y.*, John F. Diehl Co., C. E. Eveler, C. A. Pasolli, 2719 Grand Central Terminal.

M. Stephens Manufacturing, Inc.
814 East 29th Street
Los Angeles 11, Calif.
Metals: F
Machining: 1
Finishing: 1, 2, 3s, 6

for key see page 87



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Highly developed die casting techniques combined with water hydraulic impact injection produces castings for exterior parts. The combination of aluminum and zinc castings on assemblies is feasible as they can be finished the same.

Federal
DIE CASTING COMPANY
2220 NO. ELSTON AVE. CHICAGO 14, ILL
Phone AR-6-4003

For more information circle No. 47 on the Reader Service Card

THE PIERCE-WALLER
AIR-LUBE
SYSTEM

CUTS COSTS for DIE-CASTERS

- CLEANS
- LUBRICATES

Remove loose flash and clean the mold with a powerful, clean air blast — then lubricate all mold surfaces evenly, *using the same gun* — with a flick of the thumb! Adjustment *at the gun* for full range from zero to a heavy mist, spraying, fogging, or vaporizing the lubricant. Speeds up mold operation and reduces casting rejects. Makes every machine cycle count.

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for non-ferrous metal pouring

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LONGER-
LASTING

If you pour non-ferrous alloys, Spincraft ladles will save you replacement costs and make the job much easier. Designed to reduce operator fatigue by their lightness, balance, and non-spill shape, they resist burning-through as only stainless steel with its high critical melting point can do. Spincraft ladles come in 23 sizes, from ¼ lb. to 30 lb. molten metal capacity.

- 75% lighter than cast iron ladles
- Amazingly long life
- Shot-blasted for coating adhesion
- Deep conical form makes pouring easier, minimizes spillage
- Can be used for zinc and other metals without coating
- "Whack proof" handle arc-welded to reinforced cup edge
- Built to last longer, work lighter. Let your operator use one, then try to take it away from him!

Complete handle on ¼ lb. through 9 lb. size; 10 through 30 lb. size has handle bracket stub to which proper length handle can be attached.

Also...Spincraft STAINLESS STEEL Skimmer

A skimmer that really skims! Shallow radius skims surface impurities instead of ladling as deeper-cupped skimmers do. Correct size holes prevent clogging. Short handle stubs fit common pipe and permit attachment of length and type handle you want.

IN FOUR DIAMETERS: 6 inch, 8 inch, 10 inch, 12 inch.

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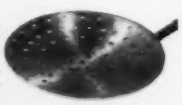

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Stainless Steel	Mild Steel
☐ Ladles	☐ Ladles
☐ Skimmers	☐ Skimmers

Company .....
Address .....
City ..... State .....
Name .....

Circle No. 92 on the Reader Service Card

Assembly: yes

Sterling Aluminum Products, Inc.
2600 N. Third
St. Charles, Mo.
Metals: A

Sterling Die Casting Co., Inc.* **
743 - 39th St.
Brooklyn 32, N. Y.
Metals: A, F
Machining: 1, 2, 3, 4
Finishing: 1, 1s, 2, 2s, 3, 3s, 4, 4s, 5s, 6, 6s, 7, 7s
Assembly: no

J & E Stevens Co.
Nooks Hill Rd.
Cromwell, Conn.
Metals: F

W. A. Stevenson Co.
12473 Grand River Ave.
Detroit 4, Mich.
Metals: A, F

Stewart-Warner Corp.* **

Stewart Die Casting Div.
275 Warren
Bridgeport, Conn.
Metals: A, D, F

Stewart-Warner Corp.
Stewart Die Casting Div.* **
4535 West Fullerton Avenue
Chicago 39, Illinois
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4s, 5, 6, 7s
Assembly: yes

Stricker Brunhuber Corp.
1915 24th St.
New York. N. Y.
Metals: A, C, F

Strite-Anderson Mfg. Co.
1920 Washington Ave., S.
Minneapolis 4, Minn.
Metals: A, C, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: yes

Stroh Die Casting Company, Inc.* **
11123 West Burleigh St.
Milwaukee 10, Wis.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 6

Super Grip Anchor Bolt Co., Inc.
3333 N. 22
Philadelphia 40, Pa.
Metals: A, F

Superba Die Castings
Box 147
Ft. Recovery, Ohio
Metals: F
Machining: 1, 2, 3
Finishing: 1, 4

Superior Die Casting Co.* **
1001 London Road
Cleveland 10, Ohio
Metals: A, F
Machining: 1, 2, 3, 4s, 5s, 6s, 7s

for key see page 87

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Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s

Syracuse Die Casting & Mfg. Co.
2101 Teall Avenue
East Syracuse, N. Y.
Metals: A, C, E, F
Machining: 1, 1s
Finishing: 1, 2s, 3s, 4s, 6
Assembly: yes

T Die Cast & Molded Products
11627 S. Main
Los Angeles 61, Calif.
Metals: A, F

Talon, Incorporated
626 Arch Street
Meadville, Pa.
Metals: F
Machining: 1, 2, 3, 4, 5, 7
Finishing: 3, 4, 5, 6
Assembly: yes

Tann Corporation* **
Congress Die Casting Division
3750 East Outer Drive
Detroit 34, Michigan
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 6s
Assembly: yes

Techni-Cast Corp.* **
600 Walnut St.
Hamilton, Ohio
Metals: A, F
Machining: 1, 3
Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 6s
Assembly: yes

Thompson Products, Inc.
Light Metals Div.
2269 Ashland Rd.
Cleveland 3, Ohio
Metals: A

Titan Metal Mfg. Co.*
Bellefonte, Pa.
Metals: A, B
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1

E. Toman & Company
8700 West 47th St.
Lyons, Illinois
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2, 3, 3s, 4, 5, 5s, 6, 6s, 7, 7s
Assembly: yes

Tool-Die Engineering Co., The* **
9210 Loren Ave.
Cleveland 5, Ohio
Metals: A, F

Trilex Corporation
44052 Yost Road
Wayne, Michigan
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 1s, 2, 2s, 3, 4, 4s, 5, 6
Assembly: yes

Tri-State Die Casting Corp.
Fourth & Ingram Sts.
Henderson, Ky.
Metals: A, F

Turner Mfg. Co., Inc.
Box 566
Kokomo, Indiana
Metals: C
Machining: 1, 2, 3, 4, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

Tuttle Electric Products, Inc.
Kirkland, Ill.
Metals: F
Machining: 1
Assembly: yes

**Twin City Die Castings Co.* **
Talmage & 33rd Ave., S. E.
Minneapolis 14, Minn.
Metals: A, C, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s

U. S. License Frame Mfg. Co.
3436 San Fernando Rd.
Los Angeles 65, Calif.
Metals: F
Finishing: 1, 2, 3s, 4, 7s

Unimatic Manufacturing Corp.
Sherwood Lane
Caldwell, New Jersey
Metals: A
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

Union Die Casting Co.* **
676 Putnam Dr.
Whittier, Calif.
Metals: A, F
Machining: 1, 3, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: yes

Universal Brass Works
1341 Noble Street
Philadelphia, Pa.
Metals: F
Machining: 1
Assembly: yes

Universal Die Casting Corp.
3500 N. W. 59th St.
Miami 42, Fla.
Metals: A, F

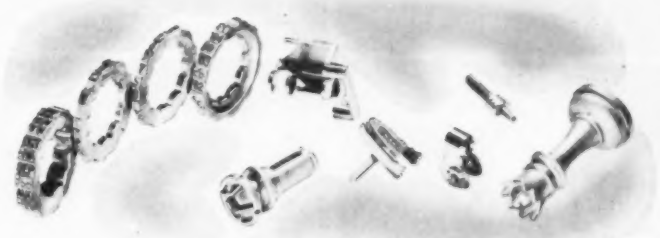
Univex Die Cast & Engineering Co.
7001 Chase Road
Dearborn 1, Michigan
Metals: A, F
Machining: 1, 3, 4, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: yes

Van Wey Die Casting & Tool Co.
866 Kaynyne Street
Redwood City, Calif.
Metals: A, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1

Veeder-Root, Inc.
70 Sargeant St.
Hartford 2, Conn.
Metals: A, E, F

Veeder-Root Inc.
P. O. Box 1591
6th Ave. Rd. at Burns Ave.
Altoona, Pa.
Metals: A, F

for key see page 87



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Victor Casket Hardware Co.
560 Schambers
Galesburg, Ill.
Metals: F
Finishing: 1, 2, 3, 4
Assembly: yes

Watchung Die Casting Corp.
P. O. Box 828
Plainfield, N. J.
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 3s, 4s, 5s, 6, 7s
Assembly: yes

Waterbury Lock & Specialty Co.
203 Broad Street
Milford, Connecticut
Metals: F
Machining: 1, 2s, 3s, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5, 6, 7s
Assembly: yes

Wayland Company
2632 West Grand Ave.
Chicago 12, Ill.
Metals: A, C, D, E, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s
Assembly: yes

Webarm Diecasting, Inc.
71 Montaup
Fall River, Mass.
Metals: A, F

Webster Air Equipment Co., Ltd.
1161 King Street
London, Ont., Canada
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2s, 3s, 4, 5s, 6s, 7s
Assembly: yes

Wells Die Casting Co.* **
1960 Carroll Ave.
San Francisco 24, Calif.
Metals: A, B, F
Machining: 1, 2, 3, 4, 5s, 6, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

Wells Manufacturing Co., Inc.
Main & South Sts.
New Vienna, Ohio
Metals: F
Finishing: 4, 6
Assembly: yes

Wessel Hardware Corp.
919 North 5th St.
Philadelphia 23, Pa.
Metals: F
Machining: 1, 2, 3s, 4, 5s, 6s, 7
Finishing: 1, 2, 3s, 4s, 5s, 6, 7s
Assembly: yes

Western Die Casting Co.* **
4065 Hollis St.
Emeryville 8, Calif.
Metals: A, B, D, F
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 4s, 5, 6
Assembly: yes

West Irving Die Casting Co.*
240 South Evergreen St.
Bensenville, Ill.
Metals: A
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 2s, 3s, 5s, 6s

Westland Die Casting, Inc.* **
4617 Sperry Street
Los Angeles 39, Calif.
Metals: A, F
Machining: 1, 2, 3, 4s, 5s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

Westward Company
7400 St. Aubin
Detroit 11, Michigan
Metals: F
Machining: 1, 2, 3, 4, 5, 6, 7s
Finishing: 1, 2, 3s, 4s, 5s, 6
Assembly: yes

Wheaton Die Casting Corp.* **
North 10th Street
Millville, N. J.
Metals: A, F
Machining: 1, 2s, 3s, 4, 4s, 5, 5s, 6s, 7, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6, 6s, 7s
Assembly: yes

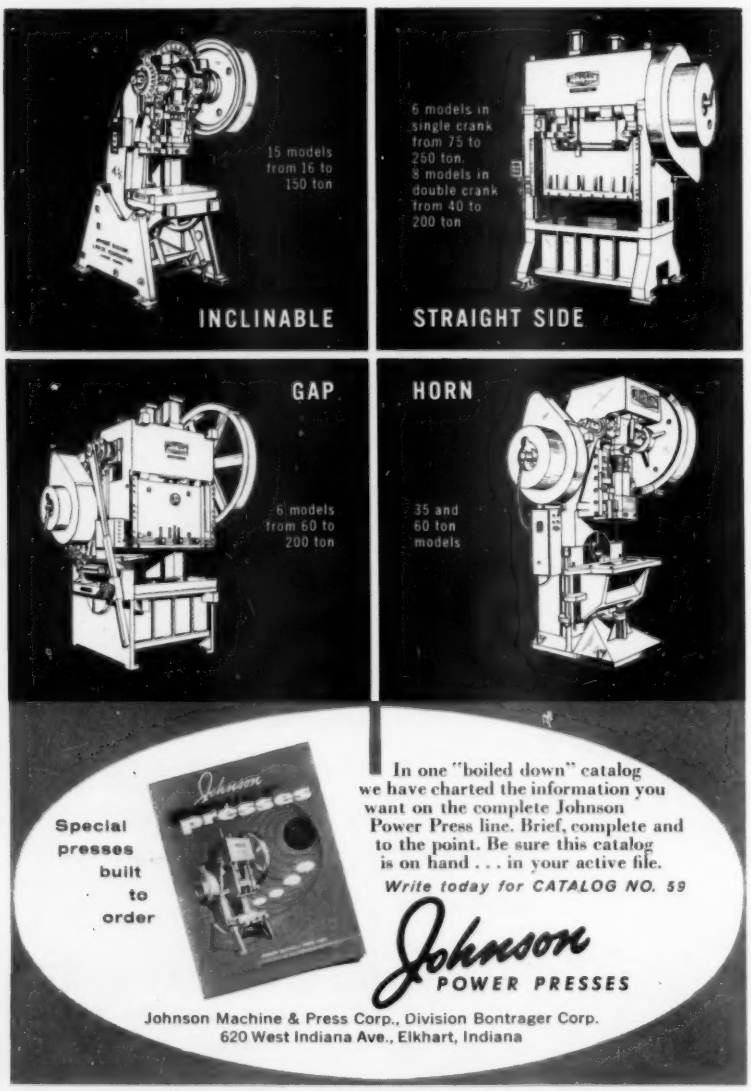
White Die Casting Co.
Mc Nab Street
Dundas, Ont., Canada
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6s, 7s
Assembly: yes

White Mfg. Co.
410 E. Fillmore St.
Colorado Springs, Colo.
Metals: A

Whitehead Die Casting Co.
1198 Zonolite Rd., N.E.
Atlanta 6, Georgia
Metals: A, C, F
Machining: 1
Finishing: 1, 3s, 6
Assembly: yes

Wico Electric Company
Phelon Avenue
West Springfield, Mass.
Metals: A, F

for key see page 87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6 models in single crank from 75 to 250 ton.
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35 and 60 ton models
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Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3, 4, 5s, 6, 7s

Wilhelm Engineering Co.
545 Stockdale
Webster City, Iowa
Metals: A, F
Machining: 1
Finishing: 1, 2, 6

Wise Die Casting Corp.
98 Olean Street
Rochester 8, N. Y.
Metals: F
Machining: 1, 2s, 3s, 4s, 6s, 7s
Finishing: 1, 2s, 3s, 4s, 5s, 6

Withrow Die Casting Co.* **
13164 Leadwell St.
North Hollywood, Calif.
Metals: A, B, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 2s, 3s, 4s, 5s, 6, 7s
Assembly: yes

Wolverine Aluminum Diecasters, Inc.
13501 Mt. Elliott Ave.
Detroit 12, Michigan
Metals: A, F
Machining: 1, 2, 3, 4, 5s, 6s, 7
Finishing: 1, 2, 3, 4s, 5s, 6s, 7s
Representatives: *Detroit, Mich.* J. Bishop, W. R. Mitchell, D. McKinder, E. Wismer, 13700 Mt. Elliottt.

Wolverine Die Cast Corp.
13700 Mt. Elliott Ave.
Detroit 12, Michigan
Metals: A, F
Machining: 1, 2, 4, 7
Finishing: 1, 2, 3, 4s
Assembly: yes

Wright Engineering Co.
1300 South Bannock St.
Denver 23, Colorado
Metals: A, D
Machining: 1, 2, 3, 4, 5, 6, 7
Finishing: 1, 2, 3s, 4, 5, 6
Assembly: yes

Yoder Die Casting Corp.* **
727 Kiser Street
Dayton 4, Ohio
Metals: A, F
Machining: 1, 2s, 3s, 4s, 5s, 6s, 7s
Finishing: 1, 2, 2s, 3, 3s, 4, 4s, 5, 5s, 6, 7, 7s
Assembly: yes

Yoder Industries, Inc.
1040 East First St.
Dayton 2, Ohio
Metals: A, C, E, F
Machining: 1, 2, 3, 4, 5s, 6, 7
Finishing: 1, 6

Zenith Diecasting, Inc.
5164 Alcoa Ave.
Los Angeles 58, Calif.
Metals: A, B, F

for key see page 87

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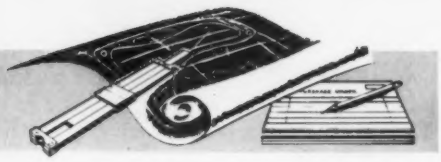

SECTION 2 ■ GEOGRAPHICAL DIRECTORY

ALABAMA

Acton-Hopkins Machine & Foundry Co., 2615 2nd Ave. N., Birmingham

Metal-Cast Co., 616 16th Ave., W., Birmingham

ARKANSAS

Arkansas Die Casting Co., P. O. Box 26, Harrison

General Motors Corp., Fabricast Div., P. O. Box 211, Malvern

Hamlin Products, Inc., 7600 Asher Ave., P. O. Box 2016, Little Rock

Hoover Ball & Bearing Co., Glenvale Products Div., Malvern

Permanent Casting Co., P. O. Box 191 - A. P. Station, Hot Springs

CALIFORNIA

A & A Die Casting Co., 12901 S. Western Ave., Gardena

Acme Tool & Die Casting Co., 4250 E. Washington Blvd., Los Angeles

Adco Die Casting Co., Inc., 9555 Rush St., El Monte

Advanced Manufacturing, Inc., 1214 W. 254, Harbor City

Alloy Die Casting Co., 2211 Firestone Blvd., Los Angeles

Aluminum Die Casting Co., 3452-58 San Fernando Rd., Los Angeles

Ambrit Industries, Inc., 1288 Los Angeles St., Glendale

American Hardware Corp., Kwikset Locks Div., 516 E. Santa Ave., Anaheim

Anderson Die Casting & Engineering Co., 1000 E. 60th St., Los Angeles

Atherton Tool, Die and Mold, 1614 South Sycamore Street, Santa Ana

Atlas Auto Products, Inc., 5815 Wilmington Ave., Los Angeles

Benda Tool & Model Works, 1444 Fourth St., Berkeley

Bucy Die Casting Corp., 625 S. Glenwood Pl., Burbank

Campbell & Cox Mfg. Co., 122 North Pomona Avenue, P. O. Box 37, Brea

Casper's Machine Shop, 1047 77th, Oakland

Challenger Lock Co., Inc., 4865 Exposition Blvd., Los Angeles

W. L. Chapman Co., Inc., 2886 E. Walnut, Pasadena

Coast Die Casting Co., 5752 Joanne Pl., Culver City

Colbert Die Cast Co., Inc., 10107 Adella Ave., South Gate

Cordray Die Casting Co., 6565 South Wilson St., Los Angeles

Robert A. Cox Die Casting Co., 11418 Knightsbridge Ave., Culver City

Crown City Die Casting Co., 84 N. Fulton Ave., Pasadena

DeRoy Mfg. Co., 9208 Atlantic Ave., South Gate

Die Cast Products, Inc., 621 W. Rosecrans Ave., Gardena

J. E. Dietz Mfg. Co., 9216 E. Bermudez, Pico Rivera

Druge Brothers Mfg. Co., 888 - 92nd Ave., Oakland

Du All Die Casting Company, 2940 Denby Avenue, Los Angeles

El Cajon Die Casting & Mfg. Co., 590 Marshall Ave., El Cajon

El Monte Tool & Die Casting, Inc., 2425 N. Tyler Ave., El Monte

Fanarc Mfg. Co., Inc., 1115 W. Whittier, Whittier

H & S Metal Products Co., 4159 Whiteside St., Los Angeles

Harvey Aluminum, 19200 S. Western Ave., Torrance

Harvill Corp., 6251 W. Century Blvd., Los Angeles

H. L. Harvill Mfg. Co., 12890 Magnolia Ave., Arlington

Imperial Die Casting Corp., 11411 Knightsbridge Ave., Culver City

Kolsters Tool & Die Co., 8451 Baldwin St., Oakland

Lansco Die Casting Co., 2029 N. Chico Ave., El Monte

Los Angeles Die Casting Co., 340 Crocker St., Los Angeles

Jos. P. Manz Die Casting Co., 550 W. Beach Ave., Inglewood

Model Die Casting, Inc., 3811 W. Rosecrans, P. O. Box 926, Hawthorne

Modern Auto Accessories, Inc., 1328 W. Pico Blvd., Los Angeles

Modern Pattern & Foundry Co., Inc., 5610 Alcoa Ave., Los Angeles

Monarch Die Casting Corp., 1642 20th St., Santa Monica

Name Products, Inc., 852 East Valley Blvd., San Gabriel

Paramount Aluminum Foundry, 15142 So. Paramount Blvd., Paramount

Parlyn Products Corp., 556 South Monterey Pass Rd., Monterey Park

Peat Mfg. Co., 10700 E. Firestone Blvd., Norwalk

Ben Phillips Nameplates, 132 W. Verdugo Ave., Burbank

Pioneer Diecasters, Inc., 4209 Chevy Chase Dr., Los Angeles

Pomona Die Casting, 4253 State, Pomona

Precision Aluminum & Brass Castings, 355 W. Olive, Gardena

Pressure Cast Products Company, 1239 High Street, Oakland

Production Mold & Machine Co., 2112 Leota St., Huntington Park

Rainbow Canyon Mfg. Corp., Rt. 2 Box 198-D, Fallbrook

Ranchers Corporation, Murrieta

Rangers Die Casting Co., Inc., 10828 S. Alameda, Lynwood

S-K-S Die Casting Co., 739 Allston Way, Berkeley

San Jose Die Casting Corp., 815 Chestnut St., San Jose

Southern California Plating Co., U. S. License Frame Mfg. Co. & Mfg. Div., 3436 San Fernando Rd., Los Angeles

Speedmaster Engineering Co., 900 Doolittle Dr., San Leandro

M. Stephens Mfg., Inc., 814 E. 29th St., Los Angeles

T Die Cast & Molded Products, 11627 S. Main, Los Angeles

U. S. License Frame Mfg. Co., 3436 San Fernando Rd., Los Angeles

Union Die Casting Co., 676 Putnam Dr., Whittier

Van Wey Die Casting & Tool Co., 866 Kaynyne St., Redwood City

Wells Die Casting Co., 1960 Carroll Ave., San Francisco

Western Die Casting Co., 4065 Hollis St., Emeryville

Westland Die Casting, Inc., 4617 Sperry St., Los Angeles

Withrow Die Casting Co., 13164 Leadwell St., North Hollywood

Zenith Diecasting, Inc., 5164 Alcoa Ave., Los Angeles

COLORADO

Joe Anderson Die Casting Company, 2600 South Delaware, Denver

Arvada Aluminum Foundry, 5015 Garrison St., Arvada

Gemco Mfg. Co. Inc., 501 S. Lipan, Denver

Norgren-Stemac, Inc., 5400 South Delaware, Littleton

White Mfg. Co., 410 E. Fillmore St., Colorado Springs

Wright Engineering Co., 1300 S. Bannock St., Denver

CONNECTICUT

Bruce Mfg. & Molding Co., Inc., Atwater St., Plantsville

Calko Die Casting Co., 43 Sunnyside Ave., P. O. Box 552, Stamford

Conetta Tool & Die Co., Inc., 73 Sunnyside Ave., Stamford

Engineers Tool & Mfg. Co., Inc., 7 Island Brook Ave., Bridgeport

for key see page 87

J & E Stevens Co., Nooks Hill Rd., Cromwell
Manger Die Casting Co., Inc., 198 Seymour Ave., Derby
Mt. Vernon Die Casting Corp., Southfield Ave., Stamford
New England Die Casting Co., Inc., 445 Front Ave., West Haven
Newton Industries, Inc., 100 Saw Mill Rd., West Haven
Newton-New Haven Co., Inc., 680 Third Ave., West Haven
Peasley Products, Inc., 993 Honeyspot Rd., Stratford
Peerless Aluminum Foundry Co., Inc., Peerless Die Casting & Permold Div., 55 Andover, Bridgeport
Stewart-Warner Corp., Stewart Die Casting Div., 275 Warren, Bridgeport.
Veeder-Root, Inc., 70 Sargeant St., Hartford
Waterbury Lock & Specialty Co., The, 203 Broad, Milford

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Allied Die-Casting Corp., 7080 N. W. 37 Ct., Hialeah
Bolam Copper Co., 2801 Jefferson St., Tampa
Die Casting Corp. of Florida, 3000 N. W. 75, Miami
Industrial Die Cast & Mfg. Co., Inc., 2980 N. W. 22nd St., Miami
Ludman Corp., 14100 Biscayne Blvd., North Miami
Pan American Metal Products Co., Inc., 401 N. W. 71st St., Miami
Ruffe, Inc., 7525 N. W. 37th Ave., Miami
K. E. Schoell Co., 764 N. W. 75 St., Miami
Universal Die Casting Corp., 3500 N. W. 59th St., Miami

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Southern Industrial Die Casting Co., Highway 319 N., Moultrie
Whitehead Die Casting Co., 1198 Zonolite Rd., N. E., Atlanta

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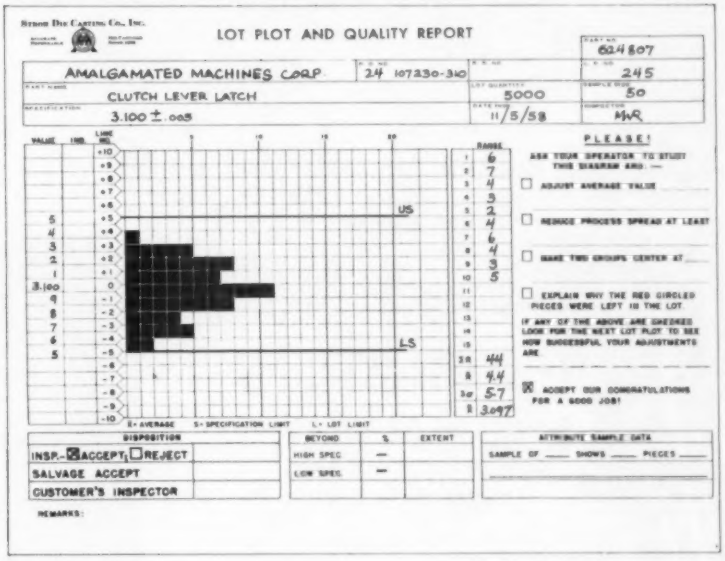
A & E Tool & Gage Company, 1202 Eddy Avenue, Rockford
Aallied Die Casting & Mfg. Co., Inc., 10029 Pacific Ave., Franklin Park
Ability Die Casting, 865 N. Sangamon, Chicago
Able Tool & Engineering Co., 865 N. Sangamon St., Chicago
Acme Die Casting Corp., 8245 N. Kimball Ave., Skokie
Admiral Die Castings, A Div. Portable Electric Tools, Inc., 250 W. 83, Chicago
Ainsworth-Precision Castings Co., Div. of Harsco Corp., 5959 W. Howard, Chicago
Ainsworth-Precision Castings Co., Div. of Harsco Corp., 2025 Kishwaukee St., Rockford
Albany Plating Co., 464 W. 33, Chicago
Aluminum Company of America, Mannheim Rd. & Madison St., Bellwood
American Flange Mfg. Co., Inc., 825 S. Kilpatrick Ave., Chicago
Amerock Corp., 4000 Auburn Street, Rockford
Anderson Tool & Mfg. Co., 3450 N. Kostner Ave., Chicago
Atomic Die Casting Corp., 7817 S. Claremont Ave., Chicago
Aurora Metal Co., 614 W. Park Ave., Aurora
Banthrico Industries, Inc., 17 N. Desplaines St., Chicago
Barrington Tool & Engineering Co., 335 E. Station, Barrington
Callen Mfg. Corp., 1425 N. First Ave., Maywood
Central Die Casting & Mfg. Co., Inc., 2935 W. 47, Chicago
Central Pattern Co., 134-36 So. Front St., Quincy
Century Die Casting Co., 2629 W. Fletcher, Chicago
Chicago Die Casting Mfg. Co., 2510 W. Monroe St., Chicago
Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago
Chicago White Metal Casting, Inc., 5239 W. Grand Ave., Chicago

for key see page 87

STROH introduces statistical quality control for die castings

DIMENSIONAL CONTROL AT STROH DIE CASTING BEGINS WITH A CHART LIKE THIS . . .



Here's what the new concept of Quality Control of STROH Die Casting means to you . . .

CRITICAL DIMENSIONS

can be held within specified limits. Buyers who rely on statistical dimensioning to assure accurate parts for assembly are invited to consult Stroh.

LOWER INSPECTION COSTS

come from simpler receiving inspection instead of full sampling of each shipment of die castings. Many manufacturers now benefit from Stroh's Quality Control

WRITE FOR DETAILS

IN OUR 56th YEAR

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Eklind Tool & Mfg. Co., 2627 N. Western Ave., Chicago
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Federal Die Casting Co., 2222 Elston, Chicago
Forster-Appelt Mfg. Co., Inc., 82 E. Lanark Ave., Lanark
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Heick Die Casting Corp., 6550 W. Diversey Ave., Chicago
Illinois Advance Die & Mold Co., 2005 N. Major Ave., Chicago
Illinois Lock Co., The, 819 S. Ada, Chicago
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Inland Die Casting Co., Inc., 8141 N. Lawndale, Skokie
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Logan Industries, Inc., 1640 W. Carroll Ave., Chicago
Metalmasters, Inc., 5292 Northwest Highway, Chicago
Mid-Western Die Casting Co., 1501 N. Halsted St., Chicago
Modern Die Casting Corp., 5419 N. Kedzie Ave., Chicago
National Die Casting Co., 3635 W. Touhy Ave., Chicago
National Lock Co., 1902 Seventh St., Rockford
Nordon Die Casting Co., Inc., 30 N. Eighth Ave., Maywood
Norlipp Co., 5909-5935 S. Lowe Ave., Chicago
Paragon Die Casting Co., 5851 W. Dickens Ave., Chicago
Quad City Die Casting Co., 3800 River Dr., Moline
Quality Metal Finishing Co., 4th & Walnut Sts., Byron
A. C. Rehberger Co., 2134 N. Magnolia, Chicago
Remington Arms Co., Inc., 25000 South Western Ave., Park Forest
Rhopac Inc., 3425 Cleveland, Skokie
Rowe Plastics & Die Casting Co., 955 W. Schubert Ave., Chicago
Serv-All Die & Tool Co., Box 117, Crystal Lake
Stewart-Warner Corp., Stewart Die Casting Div., 4535 W. Fullerton Ave., Chicago
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Tuttle Electric Products, Inc., Kirkland
Victor Casket Hardware Co., 560 Schambers, Galesburg
Wayland Co., 2632 W. Grand Ave., Chicago
West Irving Die Casting Co., 240 S. Evergreen St., Bensenville

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Alpha Industries, Die Casting Div., 1300 Wheatland Ave., Logansport
Aluminum Diecast Foundries, Inc., P. O. Box 69, Winchester
Amplex Engineering Co., Inc., 2510 Grand Ave., New Castle
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for key see page 87

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A special new material for investment casting cores

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DU-CO steatite and technical ceramics

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Kitchen-Quip, Inc., E. Marion Street, Waterloo
Littler Diecast Corp., P. O. Box 426, Albany
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Paramount Die Casters, Inc., Freeman Field, Seymour
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Ertl Co., The, 2475 Ertl Lane, Dubuque
Holmes White Metals Company, Holmes
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Rupert Die Casting Co., Gibbs Automatic Div., 1106 - 5th St., Henderson
Tri-State Die Casting Corp., Fourth & Ingram Sts., Henderson

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Caldwell Casting Co., Inc. The, Market St., Cambridge

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Cambridge Tool & Mfg. Co., Inc., 63 Gorham St., Somerville
Di-Cast Manufacturing Company, Bradford Place, Brockton
Fall River Tool & Die Co., 4 Walker St., Fall River
Form-A Die Casting Corp., 100 Felton Street, Waltham
Hampden Brass & Aluminum Co., 262 Liberty St., Springfield
Kennedy Die Castings, Inc., 200 Harding St., Worcester
L. E. Mason Co., 98 Business St., Boston
New England Tool Corp., 53 Houghton St., Hudson
Page & Hall Mfg. Co., Inc., 1600 Hyde Park Ave., Hyde Park
Webarm Diecasting, Inc., 71 Montaup, Fall River
Wico Electric Co., Phelon Ave., West Springfield

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Adjel Products Co., 13561 Helen Ave., Detroit
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Ainsworth-Precision Castings Co., Div. of Harsco Corp., 436 W. Willard St., Kalamazoo
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Alumiloy Fabricators, Inc., 202 W. Bennett, Saline
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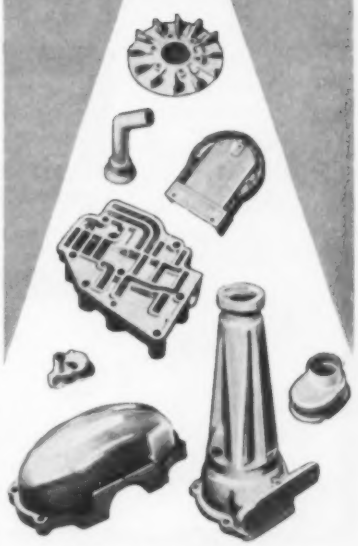

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Clinton Engines Corp., Franklin St., Clinton
Congdon Die Casting Co., 1266 Godfrey Ave., S.W., Grand Rapids
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Continental Die Casting Corp., 9615 Grinnell Ave., Detroit
Denham Mfg. Co., Pere Marquette St., Big Rapids
Detroit Die Casting Corp., 597 Beaufait St., Detroit
Detroit Ice Machine Co., 2615 12th St., Detroit
Dixie Die Cast Company, 741 South West End Ave., Detroit
Dow Chemical Co., The, Magnesium Die Casting, Midland
Du-Wel Metal Products, Inc., P. O. Box 307, Bangor
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Engineering Cast Products, 17601 Swift Ave., Detroit
Exact Tool & Die Co., 5829 Tireman Ave., Detroit
Fisk Products Inc., 207 N. Main St., Berrien Springs
Fort Die Casting Corp., 2409 Wills St., Marysville
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Grand Rapids Brass Co., 420 - 50th St., S.W., Grand Rapids
Grand Rapids Die Casting Co., 2125 Turner Rd., N.W., Grand Rapids
Grand Steel & Mfg. Co., 1400 W. 14 Mile Rd., Clawson
C. M. Hall Lamp Co., 1035 E. Hancock Ave., Detroit
Helm Accessories, Inc., 9818 Grinnell, Detroit
Hermel Die Casting Corp., P. O. Box 155, Eau Claire
Holland Die Casting Co., Inc., 582 Gordon, Holland
Hoover Ball & Bearing Co., Adrian Division, Adrian
Hoover Ball & Bearing Co., Universal Die Casting Div., Saline
Hoover Ball & Bearing Co., Utilex Div., Fowlerville
Hurd Lock & Mfg. Co., Almont Div., Almont
Jervis Corporation, Middleville
Kalamazoo Die Casting Co., Mastenbrook Dr. & Milham Rd., Kalamazoo
Kaljer Manufacturing Co. Div. of Jervis Corp., Middleville
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Ken-Moore Die Cast, Div. of Automotive Appliance Co., 12299 Woodbine, Detroit
Kent Castings Corp., 200 Garden St., S.E., Grand Rapids
Leco Plating Co., Hilltop Rd., St. Joseph
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Lincoln Die Casting, Inc., 20805 Mound Rd., Warren
Line Tool & Machine Co., 21225 Van Dyke, Warren
Litemetal Dicast, Inc., 1927 Wildwood Ave., Jackson
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Mid-State Die Casting Co., 7878 S. Division Ave., Grand Rapids
Monarch Governor Co., 2800 Tyler Rd., Willow Run
National Lead Co., Doehler-Jarvis Div., 525 Cottage Grove St., S.E., Grand Rapids
Nelson Metal Products, Inc., 510 32nd Street, S.E., Grand Rapids
New Products Corp., 1448 North Shore Drive, Benton Harbor
Norwood Tool & Machine Co., 900 Wood, Three Rivers
Paramount Die Casting Co., U. S. 12, St. Joseph

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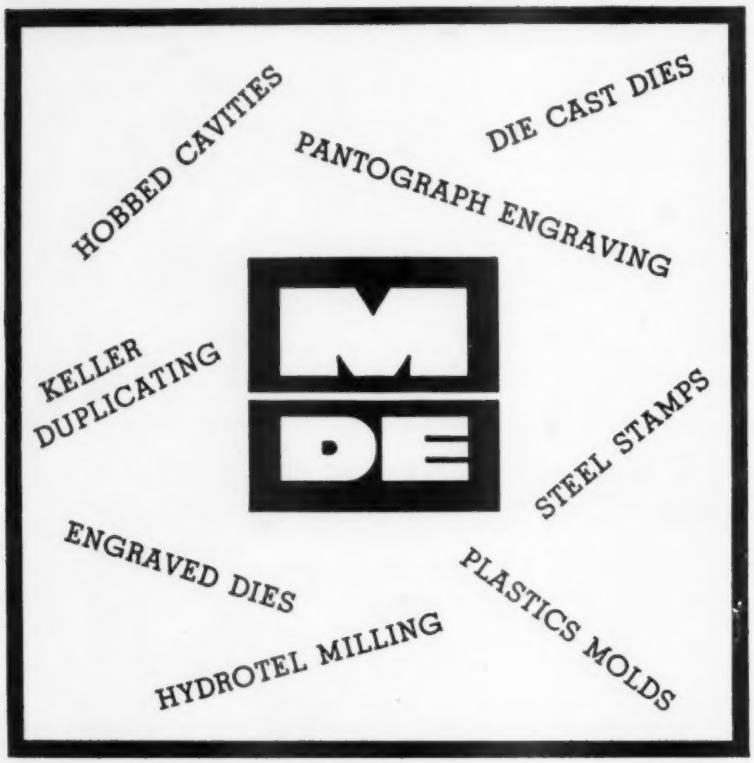

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Soper Mfg. Co., 1099 Milton St., Benton Harbor
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Trilex Corp., 44052 Yost Rd., Wayne
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Westward Company, 7400 St. Aubin, Detroit
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Monroe City Diecasting Co., Div. Kuhlman Diecasting Co., 135 Front St., Monroe City
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Republic Die Casting Co., 611 Talcott Ave., St. Louis
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St. Louis Diecasting Corp., 4528 Oleatha Ave., St. Louis
Sterling Aluminum Products, Inc., 2600 N. Third, St. Charles

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Bendix Foundries, Bendix Aviation Corp., Teterboro
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Central Casting Co., 400-416 Trumbull, Elizabeth
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Dollin Corp., 600 S. 21 St., Irvington
Duane Specialties, Ltd., 209 Parkhurst St., Newark
Excel Products Co., Inc., Codwise Ave. & Elizabeth St., New Brunswick
C. M. Grey Industries Inc., 358 Central Ave., East Orange
Harbot Die Casting Corp., 52 E. Centre St., Nutley

for key see page 87

The Vacuum Die Casting System

Because it was cast on a machine with a MORTON VACUUM SYSTEM, the reject rate on the drive-in speaker, illustrated, has been cut to less than 2%. It is a 1½ lb. aluminum shot, running self feed at a average production rate of 245 shots per hour throughout an 8 hour shift. Wall thickness is 0.062". The Morton System made possible a top production rate of 285 shots per hour over a 1 hour period.

The gas meter cover is a 1½ lb. shot. Here the Morton System made possible average daily production rates of 300 shots per hour. Top production run on this casting is 360 shots per hour. Vacuum die casting made it possible to reduce the amount of metal cast in the cover by 7 ozs. Before vacuum, it was necessary to impregnate all of the covers.

The benefits of the Morton Vacuum System can be yours. The following machine builders are now offering Morton Vacuum processes: Cleveland Automatic Machine Co., Hydraulic Press Mfg. Co., Cast-Master, Inc., and Wedglock. License agreements are being arranged with others.

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GAS METER COVER

MORTON VACUUM SYSTEMS

offer you increased production, better castings, fewer rejects and finer finish.

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Davis Products Corp., 601 - 39th St., Brooklyn
DeLaval Separator Co., 25 Columbia St., Poughkeepsie
Dieco Die Casting Co., 59-27 Decatur St., Brooklyn
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Eastern Malleable Iron Co., Eastern Casting Corp. Div., 64 S. William, Newburgh
Eastern Metal Products Corp., Tuckahoe
Eclipse Machine Div. - Bendix Aviation Corp., Oakwood Ave., Elmira Heights
Falconer Metal Specialty Co., Inc., Winchester Rd., Lakewood
Finkel Umbrella Frame Co., Inc., 200 Brush Ave., Bronx
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Joma Mfg. Co., Inc., 901 Zerega Ave., New York
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Metal-X Specialties Co., Inc., 5 E. Third, New York
Metro Casting Co. Inc., 47 Grattan St., Brooklyn
Monarch Tool & Machine Corp., 1847 Highland Ave., New Hyde Park, L. I.
National Casting Corp., 6517 - 14th Ave., Brooklyn
National Lead Co., Doehler-Jarvis Div., Batavia

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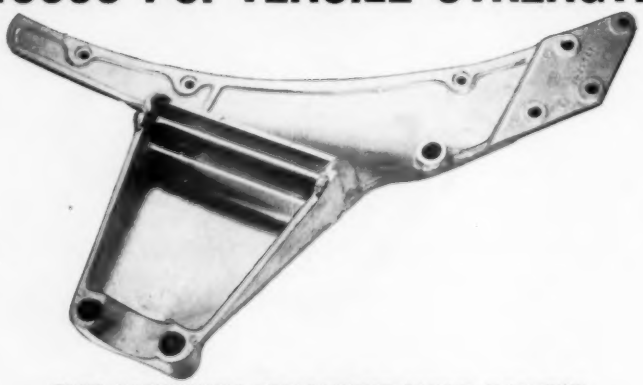
40000 PSI TENSILE STRENGTH



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Combined quality and economy is a casting results from a unique combination of assets. At Eastern Casting Corp., years of diversified foundry experience are coupled with the most modern facilities obtainable . . . the results are metallurgically sound castings which meet a wide range of requirements.

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EASTERN CASTING CORP. DIVISION
THE EASTERN MALLEABLE IRON CO.
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Seaboard Diecasting Corp., 1125 Prospect Ave., West Islip, L. I.
Sherman Pressure Casting Corp., 601 W. 26th St., New York
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Staver Co., Inc., The, 41-55 North Saxon Ave., Bay Shore
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Wise Die Casting Corp., 98 Olean St., Rochester

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Dixie Die Casting Corp., Box 1208, Reidsville

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Acme Die Casting Co., Inc., 746 Albany, Dayton
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Arrow Aluminum Castings Co., 3135 Berea Rd., Cleveland
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Cincinnati Die Casting Co., The, 2117 Spring Grove Ave., Cincinnati
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Halex Die Casting Co., 8640 Bessemer Ave., Cleveland
Hamilton Die Cast Inc., 240 North "B" St., Hamilton
Helfrich Die Casting Co., 207 Schneider Rd., North Canton
Hilfinger Corp., 1800 Westwood Ave., Toledo
Hoover Co., The, Die Casting Div., North Canton
Laco Die Casting Co., 23440 Lakeland Blvd., Euclid
Lester Castings, Inc., P. O. Box 42, Bedford
Ray Lewis & Son, Inc., Delaware Rd., Marysville
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Mohawk Foundries, Inc., 55 First St., Berea
Monarch Aluminum Mfg. Co., 9205 Detroit Ave., Cleveland
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Small quantities made economically in both Zinc and Aluminum Alloys

UNIT DIES
For both Zinc and Aluminum Castings at a much lower die cost than conventional dies.
Unit Dies cover a wide range of casting sizes to fit your needs.

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CAPACITY √ DELIVERY DATE √

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from the blue print to the finished die casting die. We are prepared to produce the best possible mold to meet your exacting requirements.

Our staff of experienced designers, engineers and mold makers, working with modern equipment, assures you of a job well done.

Our equipment includes the latest Keller and Hydrotel with capacity of molds up to four tons.

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Superba Die Castings, Box 147, Ft. Recovery
Superior Die Casting Co., The, 1001 London Rd., Cleveland
Techni-Cast Corp., 600-608 Walnut St., Hamilton
Thompson Products, Inc., Light Metals Div., 2269 Ashland Rd., Cleveland
Tool-Die Engineering Co., The, 9210 Loren Ave., Cleveland
Wells Mfg. Co., Inc., Main & South Sts., New Vienna
Yoder Die Casting Corp., 727 Kiser St., Dayton
Yoder Industries, Inc., 1040 East First St., Dayton

OKLAHOMA

Ajax Die Casting & Mfg. Co., 2002 E. 6 St., Tulsa
Little Giant Pump Co., 5101 Classen Blvd., Box 9545, Oklahoma City

OREGON

A. J. DeMoude Company, 691 S. W. Erickson, P. O. Box 392, Beaverton
Future Products Co., 3625 N. Mississippi Ave., Portland
Irrigation Equipment Co., Inc., Industrial Div., 1300 Bethel Dr., Eugene
Kadee Metal Products Co., 720 S. Grape St., Medford
Power Brake Equipment Co., 1632 S. E. 11 Ave., Portland
Product Engineering Co., 4707 S. E. 17 Ave., Portland

PENNSYLVANIA

Almar Metal Arts, 5 Water Street, Point Marion
Arlington Industries, Inc., 2 Dockash Pl., Scranton
Auel Industries, Herminie
Blue Ridge Pressure Castings, Inc., Bridge St., Lehighton
Bowersox Precision Castings, Inc., 3523 West Ninth St., Chester
John J. Carey Co., 2194-96 Bridge St., Philadelphia
Continental Metallifacture Co., 414 Pine, Scranton
General Cast Products, Inc., 2211 Waverly St., Pittsburgh
Joseph Hall Company, 2121 West Clearfield Street, Philadelphia
Hamilton Machine Shop, 7829 Hamilton Ave., Pittsburgh
J & F Tool & Die Casting Corp., R. D. 2, Athens
La France Precision Casting Co., 29th & McKean Sts., Philadelphia
Latrobe Die Casting Co., Box 149, Latrobe
Marco Industries, Inc., 3rd & Franklin Streets, Womelsdorf
National Lead Co., Doehler-Jarvis Div., Pottstown
Parker White Metal Co., 2153 McKinley Ave., Erie
Pierson Machine Co., R.D. #2, Telford
Pittsburgh Die & Casting Co., 7503 Ardmore St., Swissvale, Pittsburgh
Products Eng. & Mfg. Corp., Noeland Ave., Penndel
Reese Padlock Co., 128 Sherman St., Lancaster
Super Grip Anchor Bolt Co., Inc., 3333 N. 22, Philadelphia
Talon, Inc., 626 Arch St., Meadville
Titan Metal Mfg. Co., Bellefonte
Universal Brass Works, 1341 Noble St., Philadelphia
Veeder-Root Inc., P. O. Box 1591, 6th Ave. Rd. at Burns Ave., Altoona
Wessel Hardware Corp., 919 N. 5th St., Philadelphia

RHODE ISLAND

Ridco Casting Co., 669 Elmwood Ave., Providence

TENNESSEE

Columbia Metal Products Inc., Box 544, Columbia
Rollin Wilson Co., The, 1213 Empire Ave., Memphis

TEXAS

Dallas Die-Casting Co., 316 Rock Island, Dallas
Fort Worth Die Casting Co., Inc., 1213 E. Daggett, Fort Worth

for key see page 87

Get the results you want from DIE CASTING...

When you decide to use die cast parts, you expect, definite *results* in terms of *benefits* reflected in your manufacturing operations, or in your finished products. Milwaukee engineers and technicians, backed by the complete facilities of the modern Milwaukee plant, are qualified by training and experience to give you the results you are looking for . . . and more!

When you send your prints and "specs" to Milwaukee, you often get more than a quotation. You may get suggestions and proposals, when deemed useful, that will give you all the results you are looking for plus the *extra benefits* which the die casting process can give you.

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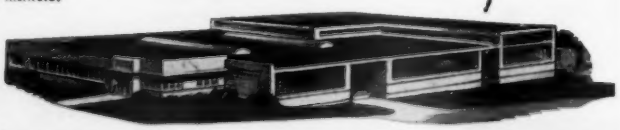
A partial list of RESULTS you can expect when you specify MILWAUKEE DIE CASTINGS
* Less Machining
* Improved Design
* Closer Tolerances
* Smoother Finish— at lower cost
* Stronger Sales Appeal
* Faster Assembly



MILWAUKEE DIE CASTING COMPANY
4146 N. HOLTON STREET • MILWAUKEE 12, WISCONSIN
Established 1909

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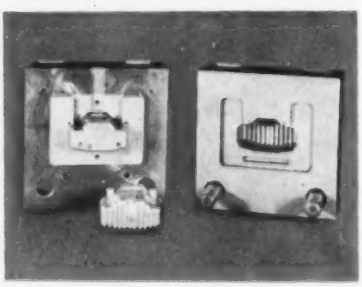
DIE CASTING DIES
PLASTIC MOLDS
ENGINEERING
DEVELOPMENT WORK



PORTCHESTER TOOL & DIE CORPORATION
24-26 MERRITT ST.
PORT CHESTER, N. Y.

Circle No. 84 on the Reader Service Card

Hall Level & Mfg. Wks., P. O. Box 1101, Austin
R. W. Hughes Industries, Inc., 2713 Ludelle, Fort Worth
Jet Guns Company, 908 N. P. Anderson Building, Fort Worth
Molded Products Co., Inc., 2820 Sylvania St., Ft. Worth
Procter Metal Products, P. O. Box 696, San Marcos
Production Die Casting Co., 6502 Rusk Ave., Houston
Pyramid Corporation, 915 Cleveland, Amarillo
Roberts Engineering & Mfg. Co., Inc., 640 Navigation Blvd., Box 4060, Corpus Christi
San Angelo Die Casting & Mfg. Co., Box 984, San Angelo

WASHINGTON

Bush Die Casting & Engineering, 6 Dravus Street, Seattle
Puget Die Casting Company, Day Island Waterway, Tacoma
Quality Diecasters, 13714 - 37th N.E., Seattle

WISCONSIN

Acme Die Casting Corp., 1635 Murray Ave., Racine
Advance Tool & Die Casting Co., 3760 N. Holton, Milwaukee
Badger Die Casting Corp., 201 W. Oklahoma Ave., Milwaukee
Lee Engineering Co., 2023 W. Wisconsin Ave., Milwaukee
Madison-Kipp Corp., 213 Waubesa, Madison
Meta-Mold Aluminum Co., Sub. of The Dayton Malleable Iron Co., 525 E. Hamilton Rd., Cedarburg
Midwest Die Casting Co., 3930 N. First, Milwaukee
Milwaukee Die Casting Co., 4132 N. Holton St., Milwaukee
Racine Die Casting Co., 1500 16th St., Racine
Reuhl Products, Inc., 4505 W. Beltline Hwy., Madison
Scherer Die Casting Co., Alyce Ave., Cedarburg
J. W. Speaker Corp., 3059 N. Weil St., Milwaukee
Stroh Die Casting Co., Inc., 11123 W. Burleigh St., Milwaukee

CANADA

Aluminum Co. of Canada Ltd., 15 Brown's Line, Toronto, Ont., Canada
Automotive Accessory Co., Ltd., 1551 Erin St., Winnipeg, Man., Canada
Banner Metal Products Ltd., 1680 Kildare Rd., Windsor, Ont., Canada
Barber Die Casting Co. Ltd., Postal Station "B", Box 240, Hamilton, Ont., Canada
Carpenter Die Casting Co. Ltd., 474 Burlington St., E., Hamilton, Ont.
Dominion Die Casting Ltd., Libby St., Wallaceburg, Ont., Canada
Electroline Mfg. Co., Limited, 1305 Windsor Avenue, Windsor, Ontario, Canada
Gordon Mfg. Co., Ltd., 1390 Wallace, Wallaceburg, Ont., Canada
Hoover Company, Limited, Commercial Die Cast Division, Hamilton, Ontario
Lakeshore Die Casting Ltd., P. O. Box 23, Oakville, Ont., Canada
Mendler Mfg. Co., P. O. Box 125, Sandwich Postal Station, Windsor, Ont., Canada
National Hardware Specialties Ltd., Box 250, Dresden, Ont., Canada
Ontario Steel Products Co. Ltd., St. George St., Box 2004, Chatham, Ont., Canada
A. O. Pope Ltd., 90 Winter St., Saint John, N. B., Canada
Pressure Castings Of Canada Ltd., 67 Main St., S., Toronto 15, Ont., Canada
Redl Industries, Limited, P. O. Box 105, Port Moody, B. C.
Richmond Machine Tool & Die Casting Co. Ltd., 5680 Fullum Street, Montreal, Que., Canada
Schultz Die Casting Co. of Canada Ltd., Wallace St., Wallaceburg, Ont., Canada
Webster Air Equipt. Co., Ltd., 1161 King St., London, Ontario
White Die Casting Co., Monad St. at Head, Dundas, Ont., Canada

for key see page 87

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Quality Aluminum Alloys

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WABASH SMELTING, INC.
FACTORY STREET · WABASH, INDIANA
TELEPHONE: WAbash 1400

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ABCO Die Casting Corp.

Accurate Die Casting Co.

Adept Castings, Inc.

Admiral Die Casting Co.

Admiral Die Castings, A Div. Portable Electric Tools, Inc.

Advance Pressure Castings, Inc.

Advance Tool & Die Casting Co.

Ainsworth-Precision Castings Co., Div. of Harsco Corp.

Allen-Stevens Corp.

Allmetal Die-cast Co.

Alloy Die Casting Co.

Alpha Industries Die Casting Div.

Alumiloy Fabricators, Inc.

Aluminum Company of America

Aluminum Company of Canada, Ltd.

Aluminum Die Casting Co.

Ambrit Industries, Inc.

American Aluminum Casting Co.

American Die Casting Co.

American Hardware Corp. Kwikset Locks, Inc.

Amerock Corp.

Anderson Die Casting & Engineering Co.

Arrow-Acme Corp.

Art Jack Die Casters, Inc.

Atlantic Die Casting Co.

Atlas Die Casting Co.

Atomic Die Casting Corp.

Aurora Metal Co.

Automotive Accessory Co., Ltd.

Badger Die Casting Corp.

Barber Die Casting Co. Ltd.

Basic Aluminum Casting Co.

Bendix Aviation Corp. Eclipse Machine Division-Bendix Foundries

Benton Harbor Malleable Industries, Inc.

Blue Ridge Pressure Castings, Inc.

Bolam Copper Company

Bowersox Precision Castings, Inc.

Bruin Mfg. Co.

Buehrle Engineering Co.

Calko Die Casting Co.

Callen Mfg. Corp.

Cambridge Tool & Mfg. Co., Inc.

John J. Carey Co.

Carpenter Die Casting Co. Ltd.

Cast-O-Matic Corp.

Central Die Casting & Mfg. Co., Inc.

Century Die Casting Co.

Char-Lynn Co.

Chautauqua Hardware Corp.

Chicago White Metal Casting, Inc.

Cincinnati Die Casting Co.

Cleveland Castings, Inc.

Clinton Engines Corp.

Clyde Equipment Co.

Coast Die Casting Co.

COMET METAL PRODUCTS CO., INC.

Conneaut Die Casting Co.

Consolidated Die Cast Corp. of America

Continental Die Casting Corp.

Robert A. Cox Die Casting Co.

Crown City Die Casting Co.

DeLaval Separator Co.

Delta Die Casting Corp.

Denham Mfg. Co.

Detroit Die Casting Corp.

Die Cast Products, Inc.

Die Casters Co.

Diecasters, Inc.

Dieco Die Casting Co.

Dixie Die Casting Corp.

Dollin Corp.

Dominion Die Casting Ltd.

Duane Specialties, Ltd.

DuPage Die Casting & Fabricating Co., Inc.

Du-Wel Metal Products, Inc.

Dynamic Die Casting Co.

Eastern Malleable Iron Co., Eastern Casting Corp. Div.

Eklind Tool & Mfg. Co.

Electric Auto-Lite Co., Lamp Div.

Electric Auto-Lite Co., Woodstock Div.

Electroline Mfg. Co., Ltd.

El Monte Tool & Die Casting, Inc.

Empire Die Casting Co.

Exact Tool & Die Co.

Falconer Metal Specialty Co., Inc.

Federal Die Casting Co.

Fort Die Casting Corp.

Fort Worth Die Casting Co., Inc.

Frantz Mfg. Co.

Future Products Co.

General Die Casters, Inc.

General Die Casting Co.

General Motors Corp., AC Spark Plug Div.

General Motors Corp., Fabricast Division

Glynn-Johnson Corp.

Grand Die Casting, Inc.

Grand Rapids Brass Co.

Grand Rapids Die Casting Co.

Grand Steel & Mfg. Co.

C. M. Grey Industries Inc.

Gries Reproducer Corp.

Gries Reproducer Corp.

Hadlock & Temte, Inc.

Halex Die Casting Co.

Hamilton Die-casting Corp.

Hamilton Die Cast Inc.

Hamlin Products, Inc.

Hampden Brass & Aluminum Co.

Harbot Die Casting Corp.

Hardy Mfg. Corp.

Hartzell Mfg. Inc.

Harvill Corp.

H. L. Harvill Mfg. Co.

Heick Die Casting Corp.

Helfrich Die Casting Co.

Hilfinger Corp.

Holland Die Casting Co., Inc.

Hoover Co., The Die Casting Div. Hoover Company, Ltd., The Commercial Die Cast Division

Industrial Die Casting Co.

Inland Die Casting Co., Inc.

Irrigation Equipment Co.

Kadee Metal Products Co.

Kalamazoo Die Casting Co.

Kamin Die Casting & Mfg. Co.

Keeler Brass Co.

Kent Castings Corp.

Kiowa Corp.

Paul Krone Die Casting Co.

Kuhlman Die-casting Co.

Lakeshore Die Casting Ltd.

Latrobe Die Casting Co.

Leco Plating Co.

Lee Engineering Co.

Lee Silver Service, Inc.

Lester Castings, Inc.

Lincoln Die Casting, Inc.

LiteMetal Dicast, Inc.

Littler Diecast Corp.

Los Angeles Die Casting Co.

Lyons Diecasting Co.

Madison-Kipp Corp.

Magnesium Industries, Inc.

Manger Die Casting Co., Inc.

Manor Die Cast Corp.

L. E. Mason Co.

Meta-Mold Aluminum Co.

Metal-Cast Co.

Metalmasters, Inc.

Metro Casting Co., Inc.

Midwest Die Casting Co.

Mid-Western Die Casting Co.

Milwaukee Die Casting Co.

Missouri Diecasting Co.

Model Die Casting, Inc.

Modern Pattern & Foundry Co., Inc.

Monarch Aluminum Mfg. Co.

MonGovCo

Monarch Governor Co.

Monroe City Diecasting Co. Div. Kuhlman Diecasting Co.

Mt. Vernon Die Casting Corp.

National Hardware Specialties Ltd.

National Lead Co., Doehler-Jarvis Div.

National Lock Co.

Nelson Metal Products, Inc.

New England Die Casting Co., Inc.

New Products Corp.

Newton-New Haven Co., Inc.

Nordon Die Casting Co., Inc.

Norgren-Stemac, Inc.

Norwood Tool & Machine Co.

Ohio Die Casting Corp.

Ontario Steel Products Co. Ltd., Die Casting Div.

Oswego Castings Corp.

Page & Hall Mfg. Co., Inc.

Pan American Metal Products Co., Inc.

Paragon Die Casting Co.

Paramount Die Casters, Inc.

Paramount Die Casting Co.

Parker White Metal Co.

Parlyn Products Corp.

Peasley Products, Inc.

Peat Mfg. Co.

Peerless Aluminum Foundry Co., Inc., Peerless Die Casting & Permold Div.

Petoskey Mfg. Co.

Phoenix Die Casting Co.

Pioneer Diecasters, Inc.

Pittsburgh Die & Casting Co.

A. O. Pope Ltd.

Precision Aluminum & Brass Castings

Premier Die Casting Co.

Pressco Casting & Mfg. Corp.

Pressure Castings, Inc.

Pressure Castings Of Canada Ltd.

Product Engineering Co.

Product Engineering & Mfg. Corp.

Production Die Casting Co.

Queens Tool Mfg. Co., Inc.

Racine Die Casting Co.

Rangers Die Casting Co., Inc.

Remington Arms Co., Inc.

Republic Die Casting Co.

Richmond Machine Tool & Die Casting Co. Ltd.

Rowe Plastics & Die Casting Co.

Rupert Diecasting Co.

S-K-S Die Casting Co.

S.U.S. Die Casting Co., Inc.

Saginaw Bay Industries, Inc.

St. Louis Diecasting Corp.

San Jose Die Casting Corp.

Scherer Die Casting Co.

Schilling Bronze Co.

Schultz Die Casting Co.

Schultz Die Casting Co. of Canada Ltd.

Seaboard Diecasting Corp.

Sherman Pressure Casting Corp.

Soper Mfg. Co.

Stella Products Corp.

Sterling Aluminum Products, Inc.

Sterling Die Casting Co., Inc.

Stewart-Warner Corp., Stewart Die Casting Div.

Stroh Die Casting Co., Inc.

Super Grip Anchor Bolt Co., Inc.

Superior Die Casting Co.

Syracuse Die Casting & Mfg. Co.

T Die Cast & Molded Products

Techni-Cast Corp.

Thompson Products, Inc.

Titan Metal Mfg. Co.

E. Toman & Co.

Tool-Die Engineering Co.

Trilex Corp.

Tri-State Die Casting Corp.

Twin City Die Castings Co.

U. S. License Frame Mfg. Co.

Unimatic Mfg. Corp.

Union Die Casting Co.

Univex Die Cast & Engineering Co.

Van Wey Die Casting & Tool Co.

Veeder-Root Inc.

Watchung Die Casting Corp.

Wayland Co.

Webster Air Equipment Co., Ltd.

Wells Die Casting Co. of California

Wessel Hardware Corp.

West Irving Die Casting Co.

Western Die Casting Co.

Westland Die Casting, Div. of Westland Tool & Mfg. Co.

Wheaton Die Casting Corp.

White Die Casting Co.

Withrow Die Casting Co.

Wolverine Die Cast Corp.

Yoder Die Casting Corp.

Zenith Diecasting, Inc.

3rd Annual

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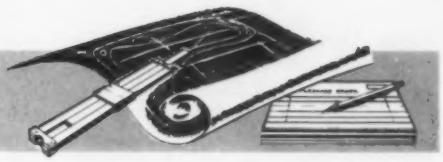

SECTION 4 ■ TOOL AND DIE DIRECTORY

ARKANSAS

Arkansas Tool & Die, 1317 Orange St., North Little Rock (1)

CALIFORNIA

Die Cast Mold Co., 6421 McKinley Ave., Los Angeles (1)

Paragon Tool Die & Engineering, 11035 Sutter Ave., Pacoima (1)

Setco, Inc., 10410 Pearmain St., Oakland (1)

CONNECTICUT

Amco Mfg. Inc., Town of East Windsor, Warehouse Point (1)

ILLINOIS

Acorn Die & Engraving Co., 1037-1039 West Chicago Ave., Chicago (1, 2)

Atlas Tool & Die Works, 2838 W. 21st St., Chicago (1, 2)

Atols Tool & Mold Corp., 5005 W. Armitage, Chicago (1, 2)

Automation Specialities, Inc., 8106 North Ridgeway Ave., Skokie (1)

Blackhawk Machine Co., 654 N. Albany Ave., Chicago (1, 2)

Charles Zapf & Co., 2423 Main, Evanston (1)

Chicago Mold Engineering Co., Inc., 4141 Washington Blvd., Hillside (1)

Damen Tool & Engineering Co., Inc., 4621-27 N. Olcott, Harwood Heights (1, 2)

Dezine Engineering Co., 4140 N. Kedzie, Chicago

Die & Tool Co., 4701-09 W. North Ave., Chicago (1)

Diversified Tool & Die Mfg. Co., 9451 Seymour Ave., Schiller Pk. (1)

Dot-Lee Tool & Engineering Co., 2031 N. Parkside Ave., Chicago (1)

Everede Tool Co., 2000 N. Parkside Ave., Chicago (1)

Federal Tool Corp., 3600 W. Pratt, Chicago (1)

Headly Mfg. Co., 4376 W. Ogden Ave., Chicago

Hill Machine Co., 1301 Eddy Ave., Rockford (1)

Leitza Die and Tool Co., Inc., 5462 N. Damen Ave., Chicago (1)

Mayfair Die & Tool Co., 3413 West Montrose, Chicago (1)

Midland Die & Engraving Co., 502 Factory Rd., Addison (1)

Midwest Tool & Metal Products Corp., 1701 W. Belmont Ave., Chicago (1, 2)

Parlebert Tool & Die, 5652 N. W. Highway, Chicago (1)

Ramcel Engineering Co., 8106 N. Ridgeway Ave., Skokie (1)

Reynolds Engineering Co., 501 - 38 St., Rock Island

Rockford Crescent Mfg. Co., 420 Buckbee St., Rockford (1)

R. O. Schulz Co., 2425 N. 75th Ave., Elmwood Pk. (1)

John E. Skach Tool Co., 1511 Mannheim Rd., Melrose Pk. (1)

Vorman Tool & Die Co., 3514 N. Martens St., Franklin Park (1)

Weber Tool Engineering & Mfg. Co., 2021W. Race St., Chicago (1, 2)

INDIANA

Benerson Corp., 1319 W. Florida St., Evansville (1)

Capitol Tool & Die, Inc., 1141 W. 16th St., Indianapolis (1, 2)

E-W Mold & Tool Co., 618 E. Market St., Indianapolis (1, 2)

Steelcraft, Inc., 407 N. Davidson St., Indianapolis (1, 2)

J. C. Thompson Tool & Die, Inc., 3000 Engle Rd., Ft. Wayne (1)

IOWA

Schoitz Engineering Works, Inc., 221-229 W. 6th St., Waterloo (1)

Sheaffer's Tool & Die, 1200 Ave. 1, Fort Madison (1)

KENTUCKY

Spati Industries, Inc., 410 Main St., Covington (1)

MASSACHUSETTS

C. W. Bristol Co., P. O. Box 748, North Attleboro (1, 2)

Cambridge Tool & Mfg. Co., Inc., 63 Gorham St., Somerville (1, 2)

Di Pierro Mfg. Co., Inc., 420 Boston Turnpike, Shrewsbury (1)

Eastern Tool Co. of Springfield, 29 Worthington St., Springfield (1)

MacKenzie Tool & Engineering Co., 88 Andrew St., Springfield

Northern Tool Mfg. Co., 93 Orleans St., Springfield (1)

MICHIGAN

Advance Products Corp., North Shore Dr., Benton Harbor (1, 2)

American Mold Co., 20913 Schoenherr Rd., Warren (1)

B. & K. Tool & Die, Inc., 5675 Dixie Highway, Saginaw (1, 2)

B & L Engraving, Inc., 1504 Industrial, Dearborn (1)

Barget Mold & Die Co., 22504 Telegraph, Detroit (1)

Brettrager Mfg. Co., 5410 East St., Saginaw

Capitol Die Mold, Inc., 7180 E. Mc Nichols, Detroit (1, 2)

Congress Die Casting Div., Tann Corp., 3750 E. Outer Dr., Detroit (1, 2)

Conway Cavity Co., 11063 S. Telegraph Rd., Taylor Center (1)

Dalkrom Tool & Die Corp., 13501 Mt. Elliott, Detroit (1, 2)

Dearborn Diecasting & Cavity Co., 199 Vinewood Ave., Detroit

Detroit Jig Grinding Co., 13880 E. Nine Mile Rd., Warren (1, 2)

Experimental Tool & Die Co., Inc., 20550 Hoover Rd., Detroit (1, 2)

Gelesko Tool & Engineering Corp., Bridgman (1)

Hamilton Broach & Gage, 3266 Yemans, Detroit (1)

John Hartman Co., 6530 Chase Rd., Dearborn (1)

Helfrecht Machine Co., 412-S. Hamilton, Saginaw (1)

Hercules Engineering & Mfg. Co., 8640 Grinnell, Detroit (1)

Holly Tool & Machine Co., 111 Rosette, Holly (1)

Hope Tool & Die, Inc., 17434 Cliff, Detroit (1, 2)

Impression Die Co., 4672 Bellevue Ave., Detroit

Industrial Economy Tool Co., Inc., 7401 Dubois, Detroit (1)

K. & S. Mold Co., 165 Campbell St., River Rouge (1)

Loehr Die & Mold Co., 13143 East Nine Mile Rd., Warren (1)

McCall Industries, Inc., 20150 Sherwood Ave., Detroit (1, 2)

McReynolds Die & Tool Co., 1234 Mt. Elliott Ave., Detroit (1, 2)

Master Mold & Die, Inc., 22722 Dequindre, Warren (1)

Micro Tool & Engineering Corp., 23262 Telegraph Rd., Detroit (1)

Neumann Engraving Co., 11343 Schaefer Rd., Detroit

North End Tool & Die Co., Inc., 8800 North End St., Oak Park (1, 2)

Omega Tool & Die Co., 11689 Woodbine, Detroit (1)

Peters Die Sinking, Inc., 1704 East 9 Mile Rd., Hazel Park (1, 2)

Permanent Mold Die Co., Inc., 2275 E. Nine Mile Rd. (1)

Regent Tool & Mfg. Co., 839 E. Ten Mile Rd., Madison Hts. (1)

Rebmann Products Corp., 24539 Warren Rd., Dearborn (1)

Renell, Inc., 8939 Hubbell, Detroit (1)

for key see page 87

Sigma Di-Tool, Inc., 2212 E. Nine Mile Rd., Warren (1, 2)
Special Machine & Engineering, Inc., 20000 W. 8 Mile Rd., Detroit (1, 2)
Sterling-Detroit Co., 261 E. Golden Gate, Detroit (1, 2)
Supreme Impression & Mold Co., 23080 Groesbeck Hwy., Warren (1)
Wayne Die & Tool, 21500 Hoover Rd., Box 85 Harper Station, Detroit (1, 2)
Winkle Tool & Mfg. Co., 25305 W. Warren Ave., Dearborn

MINNESOTA
Acme Machine Co., 2901 Fremont Ave., So., Minneapolis (1)
American Mach. & Tool Co., 205 N. 3rd St., Minneapolis (1)
Gage Tool Co., Inc., 3212 Washington Ave., N., Minneapolis (1)
Hartzell Mfg., Inc., 2516 Wabash Ave., St. Paul (1, 2)
Metro Tool & Engineering Corp., 3301 E. 26th St., Minneapolis (1)
Midwest Machine & Tool, Inc., 727-4th St., S., Minneapolis (1)
Midwest Tool & Die Co., 114 N. 3rd St., Minneapolis (1)
North Star Specialties, Inc., 800 - 16th Ave., S.E., Minneapolis (1)
Product Design & Engineering, 750 Florida Ave., S., Minneapolis (1)
Remmele Engineering, Inc., 515 University Ave., St. Paul (1, 2)
Steelcrafters, Inc., 308 Prince St., St. Paul (1)
Tool Products Co., 924 - 19th Ave., S., Minneapolis (1, 2)
World Tool & Engineering Co., 2611 N. 2nd St., Minneapolis (1)

MISSOURI
Bachman Machine Co., Inc., 4321 N. Broadway, St. Louis
Detroit Tool Engineering Co., Jackson & Highway 66, Lebanon (1)

NEW JERSEY
Ace Tool & Mfg. Co., 532 Mulberry St., Newark
Camp Tool & Die Corp., 26 Camp St., Newark
Gebauer Die & Tool Co., Okner Parkway, Livingston (1)
C. L. Hill Mfg. Co., Inc., 210 South Ave., E., Cranford (1)
Newark Die Co., 24 Scott St., Newark

NEW YORK
Allen Tool Corp., 308 Maltbie St., Syracuse (1)
Alliance Mold Co., Inc., 1300 Mt. Read Blvd., Rochester (1)
Allied Engravers, Inc., 552 W. Broadway, New York
Bondy Engineering Co., 172 So. Portland Ave., Brooklyn (1)
Buffalo Pattern Corp., 830 Hertel Ave., Buffalo (1, 2)
College Eng. & Tool Co., 14-13 - 118th St., College Point
Dieco Die Casting Co., 59-27 Decatur St., Brooklyn (1)
Egor Tool & Die Co., 52 A. Penataquit Ave., Bayshore (1, 2)
O. L. Engstrom, Inc., 39 Bond St., New York
MacCordy Machine Tool & Die Corp., 256 S. Third St., Fulton (1, 2)
Madison Technical Corp., 106-108 West End Ave., New York (1)
Mark Kenny Products Co., Inc., 251 E. 137 St., New York (1, 2)
Mohawk Tool & Die Corp., 25 Rutter St., Rochester
Molds & Mfg., Inc., 3222 Union Rd., Buffalo
Phinney Tool & Die Co., Inc., W. Center St., Medina (1)
Portchester Tool & Die Corp., 24-26 Merritt St., Port Chester (1, 2)
Primas Mold Makers, Inc., 240 Sheridan Ave., Buffalo (1)
Rane Tool Co., Inc., 17 Ross St., Jamestown (1)
Simonds Tool Corp., 203 Edison Sts., P. O. Box 1059, Syracuse
Stricker-Brunhuber Corp., 19 W. 24th St., New York (1)
Ultra Tool & Die Co., 601 W. 26th St., New York (1)

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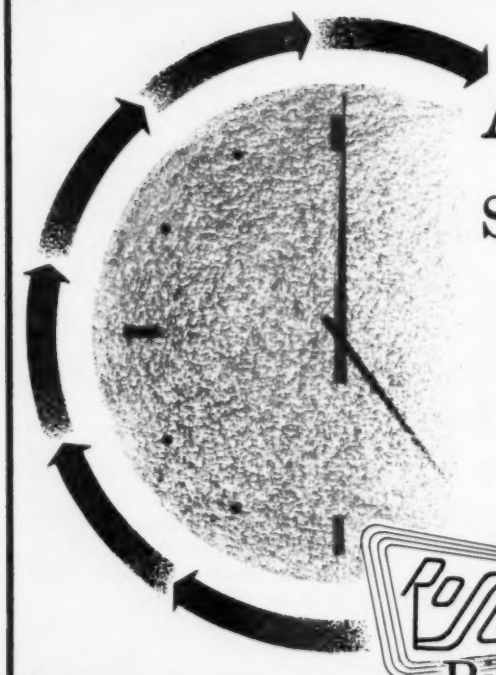

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Service and Production

When your production department is yelling at you to get those castings out "yesterday", you'll get the fastest service on your dies by coming to R. O. Schulz. We're set up for speed. We have the machines to make your dies, whether they're 15 tons or a few pounds, and the skilled designers and die makers to make them right. You get top quality workmanship at lowest cost when you take advantage of our specialized die and mold making facilities.

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Richard O. Schulz Company

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For more information circle No. 90 on the Reader Service Card

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Zelf Tool & Die Works, 44 Greene St., New York

OHIO

A-Z Mold & Die Co., Lakeland Blvd., Willowick
American Gage & Mfg. Co., 125 Bayard St., Dayton (1, 2)
American Tool & Mfg. Co., Urbana
Anderson Special Machine & Die Co., 34670 Lakeland Blvd., Eastlake (1)
Atomic Tool & Die, Inc., 351 E. 131st St., Cleveland
Best Tool & Die Co., 12901 Roseland Ave., Cleveland (1)
Cast-Master, Inc., 23901 Aurora Rd., Bedford Hgts. (1, 2)
Cast-Mold Co., 20232 Detroit Rd., Cleveland (1)
Clark Metal Products, 370 W. Fairground St., Marion (1)
Cleveland Tooling Ind., Inc., 2415 Brookpark Rd., Parma (1)
Cleveland Mold & Die, Inc., 12520 Triskett Rd., Cleveland
Columbia Mold & Die Co., 25840 Miles Ave., Bedford (1, 2)
Custom Machine, Inc., 9200 George Ave., Cleveland
Dalhart Tool & Die, Inc., 12640 Triskett Rd., Cleveland (1)
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Dreir Tool & Die Corp., 1917 Vine St., Cincinnati (2)
Estee Mold & Die, Inc., 1467 Stanley Ave., Dayton (1)
General Tool Co., Landy Lane, Cincinnati (1)
J. W. Harwood Co., 18001 Roseland Rd., Cleveland
Holland Engineering Co., 7340 Dorr St., Toledo (1, 2)
Hub Mfg. Co., 4189 Greenvale Dr., So. Euclid (1)
Impression Tool & Mold Co., 1050 Brookpark Rd., Cleveland (1)
Inshield Die & Stamping Co., 1931 Manhattan Blvd., Toledo
J. & L. Machine & Tool Co., 14800 Miles Ave., Cleveland (1)
Jet Die & Development Co., 25020 Lakeland Blvd., Euclid (1)
Jost Tool Co., 1066 E. 222 St., Cleveland (1)
Kennick Mold & Die, Inc., 3601 Detroit Ave., Cleveland (1)
Lagonda Tool Co., 1935 Legonda Ave., Springfield (1, 2)
Master Mold & Die Co., 8701 Silverton Ave., Cleveland
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Prime Machine & Tool, Inc., 25890 Lakeland Blvd., Cleveland (1)
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PENNSYLVANIA

Anson Tools & Gages, Inc., 2733 W. 11th St., Erie (1)
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for key see page 87

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Die Cast Dies Only

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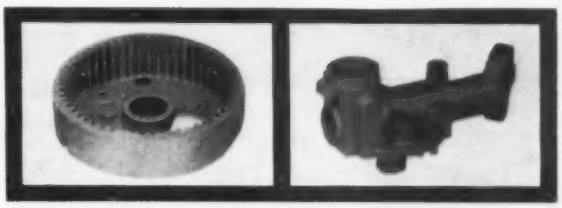

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MARVEL Synclinal FILTERS

Simplify Preventive Maintenance on Die Casting Industry's Hydraulic Equipment

LINE TYPE
(Cutaway)

MEET
J.I.C.
STANDARDS

SUMP TYPE
(Cutaway)

Change costly

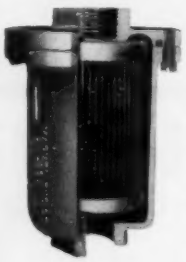
"DOWN TIME"

to profitable

"OPERATING TIME"

Marvel's BALANCE Synclinal design offers 2½ times more ACTIVE filtering area with sufficient storage capacity for filtered-out damaging particles. Easily disassembled, thoroughly cleaned and reassembled, on the spot in minutes. No throw-away parts, no moving parts to wear out or break down.

OVER 800 Original Equipment Manufacturers install MARVEL SYNCLINAL FILTERS as standard equipment for dependable protection on all hydraulic and other low pressure circulating systems.



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Handles up to 25 G.P.M. of hydraulic oil at very low pressure drop. Monel wire cloth filtering media is available in mesh sizes from 30 to 200. Cartridge is easily removed for cleaning.

A SIZE FOR EVERY NEED

Line or sump type filters in capacities from 5 to 100 G.P.M. Greater capacities attained by multiple installations. Monel mesh sizes from 30 to 200.

IMMEDIATE DELIVERY

Our catalogs contain complete engineering data and dimensional charts of all models and sizes. You can order a filter to meet your specific requirements and get IMMEDIATE DELIVERY.

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Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated:—

- ☐ Catalog #108—For Hydraulic Oils, Coolants, Lubricants
- ☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aqueous Base)
- ☐ Catalog #400—For Fire-resistant Hydraulic Fluids (Synthetic).
- ☐ Catalog #301—For Water

PMM-1

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Company .....

Address .....

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State .....

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Norris Tool & Machine Co., 4315 N. 3rd St., Philadelphia
Penna. Tool & Mfg. Co., 130 S. Hartman St., York (1)
Pickar Bros., 876 E. Schuylkill Rd., Pottstown (1)
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NEW PRODUCTS

continued from page 86

GREASE STICK

. . . spreads easily

Grease Stick G.S. 7205, is a combination of light-bodied greases that will spread easily on abrasive belts or wheels, preventing clogging or logging. Manufactured by SCHAFFNER MFG. CO., INC., the stick is recommended for slow moving belts or wheels where there are not enough surface feet per minute to melt conventional type greases.

Circle No. 221 on Reader Service Card

BARREL FINISHER

. . . has selectable compartments

Compartments that can be interchanged to fit a wide range of requirements, is the main feature of this machine introduced by RAMPE MFG. CO. The unit has one, two or four compartment vinyl-lined barrels and has a variable speed of from 12 to 36 rpm. Other features include quick-lock, gasketed doors with side opening and rugged all-welded steel plate construction.

Circle No. 218 on Reader Service Card

continued on page 130

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from
CASTING SUPPLY HOUSE
CONSULTATION ON INVESTMENT CASTING PROBLEMS

As a much needed service to the trade, we are now offering the expert "know-how" of our Casting Consultant, Mr. John S. Palazzo. Contact us and we will arrange for him to visit you in your plant.

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Complete rework service on goosenecks, plungers, shot sleeves and plunger tips.

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*This tube has been immersed in aluminum over 1000 hours with no evidence of destruction or failure.

Rex-Buckeye Co.

ATlantic 1-6718
2109 W. 41st ST., CLEVELAND 13, OHIO

For more information circle No. 117 on the Reader Service Card

Months and months ago, Latrobe produced intricate parts and shapes for many new products scheduled in 1959 and the years beyond . . .

Long before these designs of "things-to-come" were completed on the drawing boards, those behind the products had turned to Latrobe! For they knew from past experiences and performances, Latrobe has the facilities to produce quality Die Castings!

Furthermore, they knew Latrobe maintains modern testing, development and research laboratories, manned by qualified metallurgical engineers dedicated to technology, whose specialty is to meet the precise physical and characteristic requirements of the specifications!

Finally, they knew the Latrobe reputation for workmanship, service and economy whether on small or large quantity production runs.

Send for your copy of "Latrobe Castings" on your letterhead. It tells the inside story why L.D.C. Aluminum, Zinc and Lead Die Castings sparkle the 1959 new product parade!

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BUFFALO, N. Y.
Harry W. Harding
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Tel: Amherst 1164

*Latrobe Die Casting Co.
Latrobe, Pennsylvania

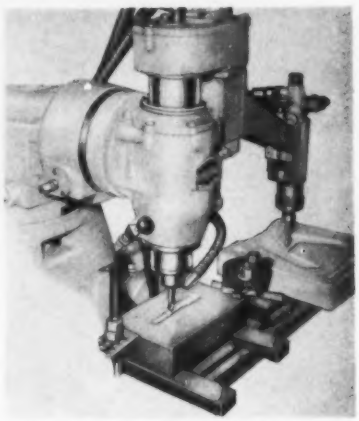
Established 1918

To Make the Best — Begin with the Best Castings!

For more information circle No. 64 on the Reader Service Card

NEW PRODUCTS
continued from page 129

COPY MILLING HEAD
. . . has increased accuracy



Increased accuracy and sensitivity, and low-price are the features of a copy milling head that will fit any milling machine or slow table-speed planer. Developed by PATHEX LTD., the Path-O-Mill has the actuating cylinder incorporated in the quill housing and the actuating piston as an integral part of the quill. This causes the actuating forces to act coaxially with respect to the quill rather than through the resolution of a moment as in conventional units with the cylinder beside the quill.

Circle No. 224 on Reader Service Card

CONTINUOUS BLENDER
. . . for liquid-dry mixtures

THE JOHNSON-MARCH CORP. has developed a continuous-flow blender that accurately proportions, mixes, blends and discharges a wide range of dry materials, or blends liquids with solids in precise quantities.

The Verticone can be used for precise blending for powder metallurgy, and other industrial applications.

Circle No. 215 on Reader Service Card

BOOSTER PUMPS
. . . can handle large volume loads

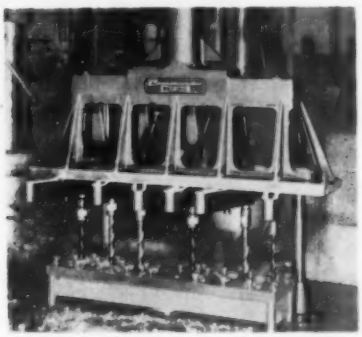
A series of mechanical booster vacuum pumps have been developed by F. J. STOKES CORP. that operate at fast pumping speeds in the pressure range from 10 microns to 1 millimeter. The Four models in the series have maximum pumping speeds of 1050, 1250, 2900 and 5100 c.f.m. They have an ultimate vacuum of ½ micron.

The pumps are integrated two-stage pumping systems, supplied as a complete package, and built on a common base-plate.

Circle No. 214 on Reader Service Card

MULTI-DRILL

. . . has area up to 35½"

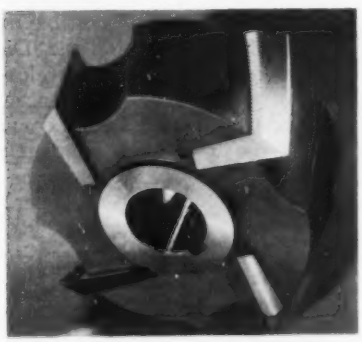


Designed for applications requiring drilling or tapping of up to 15 holes in any pattern on a rectangular area from 3" up to 35½". Introduced by COMMANDER MFG. CO., the unit is equipped with universally adjustable locating arms, heavy duty universal joints, and anti-friction bearings. Maximum capacity of the unit is ⅜" in steel. Minimum center distances as close as ½" are possible.

Circle No. 226 on Reader Service Card

MILLING

. . . Aluminum & Magnesium



"Microcut" is a new type milling cutter developed by O. K. TOOL CO., INC., for the milling of aluminum and magnesium. The cutter has highly finished cutting edges and polished flutes. The cutters are available in the inserted, wedge-type and solid type cutters, including high-speed steel, cast alloys and carbide.

Circle No. 227 on Reader Service Card

18 BARRELS

. . . can be handled by one operator

Large production in limited space is the main feature of SPEED-D-BURR CORPORATION'S Mity-Mite Installation. One operator can handle 18 operating barrels at one time. A centrally located jib boom makes it easy to handle the individual barrels between the mechanized units and unloading equipment. At the end of any run the media is automatically screened and separated according to size.

Circle No. 216 on Reader Service Card

McLEOD GAUGE

. . . has extended range

This vacuum gauge reads with high sensitivity to 1×10^{-6} mm Hg, and moderate sensitivity in the 1×10^{-7} mm Hg decade. Developed by CONSOLIDATED ELECTRODYNAMICS CORP. the gauge is designed to serve as a primary laboratory standard vacuum gauge in lower pressure areas. The range of the gauge is covered on one quadratic scale from 2×10^{-3} to 1×10^{-7} mm Hg.

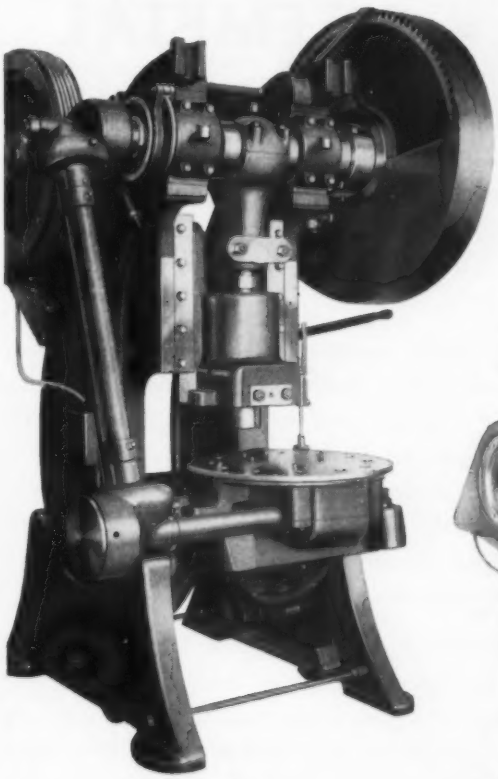
Circle No. 210 on Reader Service Card

continued on next page

Modern FEDERAL Dial Feeds give you

automation at less cost!

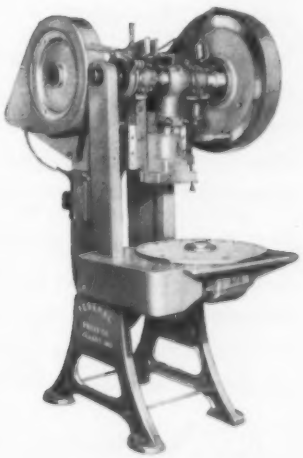
—eliminate specialized and more costly equipment!



No. 7 Dial Feed
Gear Driven. Capacity, 80 tons.

Federal Dial Feeds are your answer to greater production at lower costs. Equipped with special jigging, automatic feeds and ejectors, their applications are virtually unlimited and the need for specialized, more costly equipment often eliminated. (Example, one manufacturer increased production 600%.)

Add Federal's quality features and workmanship . . . and you've got a winner. Investigate Federal Dial Feeds for your operations. Gear or chain driven with cam-type indexing mechanisms. Sizes range from 6 to 80 tons.



No. 3 Dial Feed
Chain Driven. Capacity, 26 tons.

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33 Years' Experience in Dial Feed Engineering and Construction

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SERVICE • with • SKILL

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As one of America's major producers of magnesium and aluminum die castings, Litemetal Dicast, Inc., has now rounded out its customer services with the addition of a division for producing zinc die castings. These expanded facilities establish Litemetal as one of the handful of organizations that are actively producing die castings from all three of these metals.

To assure isolation from other metals and the prevention of alloy contamination, the Zinc Division is contained in a building adjoining the main Litemetal Plant. It is equipped with powerful, modern 400 to 600 ton casting machines and trim presses. Vacuum equipment is available for high-level, proved effective die cavity evacuation. Additional services include the plating and finishing of zinc die castings to hardware quality standards, and are available through integrated and affiliated facilities.

In the 12 years since its founding, in 1946, Litemetal has established a national reputation for the production of quality aluminum and magnesium die castings. The zinc operations are supervised by qualified Litemetal experts who are dedicated to uphold their motto of "Service with Skill".

Small Enough for Intimate Service—Big Enough for Complete Service

Write today for literature and design information. Quick action on inquiries.

DIE CASTING RESEARCH FOUNDATION PARTICIPANT

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A SUBSIDIARY OF HAYES INDUSTRIES
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PLANT AND EXECUTIVE OFFICES

For more information circle No. 66 on the Reader Service Card

NEW PRODUCTS
continued from page 131

ENDOTHERMIC GENERATOR
. . . is dependable, efficient

Design features which permit more accurate control of gas-to-air ratio, retort chamber temperature, "Carbon Pressure", and low dew point, have been incorporated into these generators manufactured by C. I. HAYES, INC.

The new features include a precise-acting carburetor, a new straight-through retort, new heat-exchanger design, and new ceramic heating elements.

Circle No. 208 on Reader Service Card

BRUSH MECHANISM
. . . cleans dies

The removal of the casting from between the dies and the cleaning of the die faces of flash and foreign matter, has been made possible on the DCMT Ram Automatic Die Casting machine by the development of a new brush mechanism.

Introduced by DCMT SALES CORP., the brushes are set in a completely adjustable holder to take cone variations in die contour. The operation is fully automatic.

Circle No. 211 on Reader Service Card

ULTRASONIC CLEANER
. . . for lab. or production

A low frequency ultrasonic cleaner for small parts cleaning, blind hole washing, and removal of radioactive contamination, has been developed by ALCAR INSTRUMENTS, INC. The standard unit consists of an electronic generator that delivers 60 watts average, 240 watts peak of energy to crystal transducers mounted on a one gallon stainless steel tank.

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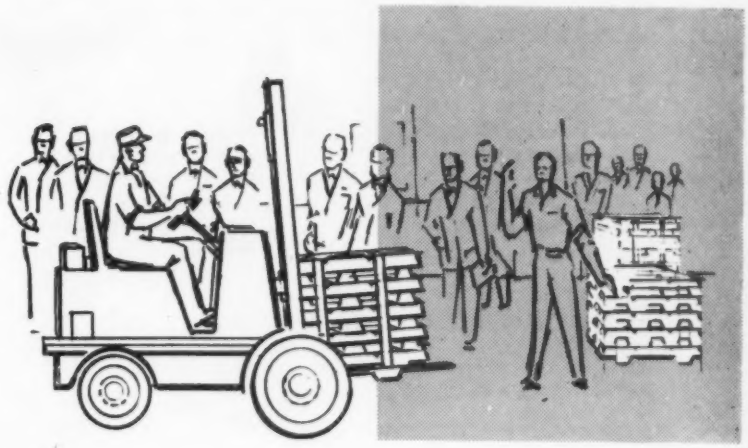

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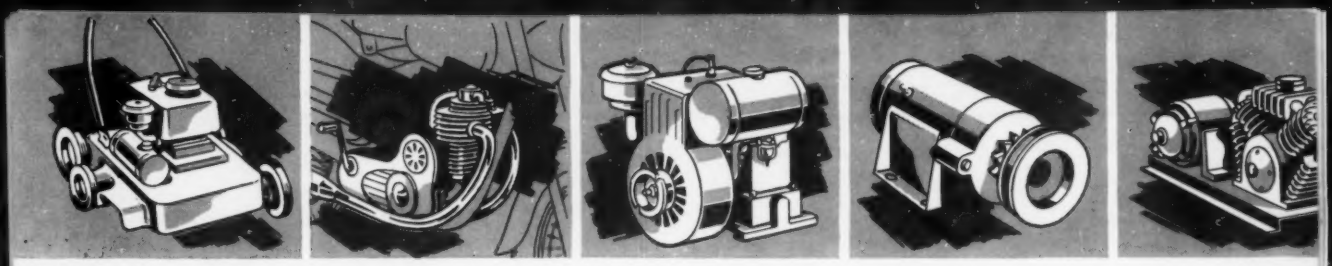

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